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Bulletin of the

British Ornithologists' Club

Edited by
Prof CHRIS FEARE

Volume 119 No. 1 March 1999

MEETINGS are held in the **Sherfield Building of Imperial College,** South Kensington, London, SW7. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from **6.15 pm,** and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking.) Informal talks are given on completion, commencing at about **8.00 pm.**

FORTHCOMING MEETINGS

20 April.—Roger Safford will speak on "*Birds of Mauritius*". Roger was born in 1967, and after gaining his degree in Natural Sciences in Cambridge in 1988, achieved his PhD on Conservation of the forest-living birds of Mauritius, at the University of Kent, in 1994. His special interest is in natural history and conservation in the western Indian Ocean and East Africa, and he has spent five years in the area, especially in Mauritius, and also in Madagascar. He is currently Tropics projects co-ordinator, Royal Holloway Institute for Environmental Research, University of London. As a Member of the African Waterfowl Census, he was National Co-ordinator for Mauritius 1990–93, and has been a Member of the IUCN Species Survival Commission since 1991.

*Applications to the Hon. Secretary by **6 April,** please.*

Tuesday 4 May. ANNUAL GENERAL MEETING AT 6 pm, followed by a **Club Social Evening.** There will be no speaker but Members are invited to bring along one or two slides (or a specimen!) of a bird of topical interest, and to speak **for not more than 5–10 minutes** about it. The aim will be to generate discussion, and to facilitate the exchange of information between Members.

*Applications to the Hon. Secretary by **20 April,** please, including subjects to be raised, and any special facilities required.*

Thursday 24 June. Club Visit to Darwin Museum, at Down House.

Arrangements are being made for a visit by Club Members to Down House, (Nr. Orpington, Kent) arriving at 10.30 approx, and including lunch. It would be helpful for planning if all those showing initial interest would complete the enclosed slip and forward to the Chairman, Rev. T. W. Gladwin, as indicated.

Other meeting dates for 1999.
6 July—Jonathan Ekstrom on "*Birds of New Caledonia*",
7 September—Alex Randall MP on "*Bird Conservation matters, as viewed from Westminster*",
12 October—Steven Piper on "*Long term studies of birds in southern Africa*", and
30 November—Richard ffrench on "*Dickcissels in Trinidad*".

Overseas Members visiting Britain are particularly welcome at meetings. For details in advance, please contact the Hon. Secretary, Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants GU31 5PA, UK (or Email: mbcasement@aol.com)

Tel/Fax: 01730-825280 for late bookings and cancellations.

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 119 No. 1 Published 23 March 1999

CLUB NOTES

The eight hundred and eightieth meeting of the Club was held on Tuesday, 17 November 1998 at 6.15 pm. 29 Members and 8 guests attended.

Members present were: The Rev. T. W. Gladwin (*Chairman*), Miss H. Baker, D. R. Calder, Cdr M. B. Casement RN, Professor R. J. Chandler, Professor R. A. Cheke, J. Davies, S. P. Dudley, S. J. Farnsworth, F. M. Gauntlett, Dr A. G. Gosler, D. Griffin, C. A. R. Helm, G. P. Jackson, J. A. Jobling, Dr C. F. Mann, D. J. Montier, Mrs A. M. Moore, Dr W. G. Porteous (*Speaker*), Dr R. P. Prŷs-Jones, N. J. Redman, D. Ritchie, R. E. Scott, Dr R. C. Self, Dr D. W. Snow, F. Steinheimer, N. H. F. Stone and C. W. R. Storey.

Guests attending were: C. Carter, Mrs M. H. Gauntlett, Mrs J. M. Gladwin, Ms C. Hoff, Prof. J. Kear, Mrs M Montier, P. J. Moore and Baron. R. Stjeinstedt.

The Chairman announced, with regret, the death (in October) of J. H. Elgood, a distinguished Member of the Club since 1963 (*Committee 1967–1970, 1986–1990, Vice-Chairman 1971–1974, 1989–90, Chairman 1974–1977*), and senior author of BOU 'Checklist' Series *Birds of Nigeria* (revised 1994).

After dinner, Dr W. G. (Bill) Porteus gave a presentation, illustrated with slides, entitled "*Birds of the Humboldt Current*". The material for the talk had been collected in the course of a voyage along the coasts of Peru and Chile, starting in Guayaquil, Ecuador, and finishing in Puerto Montt, Chile, which he had made in late October and early November, 1995.

The Humboldt is a cold, north-flowing current caused by the interaction of elements of the marine and atmospheric circulation systems. A deep, east-flowing, ocean current runs up against the land along the west coast of South America and is forced to rise to the surface. Offshore winds push the cold surface water westwards along the equatorial zone and pull more cold water north along the coast, thus generating the Humboldt Current.

The cold, deep-ocean water is rich in dissolved mineral nutrients and, when it reaches the surface photic zone, this provides an ideal environment for the growth of phytoplankton and the food chain that it supports. This makes the Humboldt Current a rich area for marine life, and a centre of endemism for marine birds: Humboldt Penguin *Spheniscus humboldti*, Markham's *Oceanodroma markhami* and Hornby's *O. hornbyi* Storm-Petrels, the distinctive *thagus* race of Brown Pelican *Pelecanus occidentalis*, Peruvian Booby *Sula variegata*, Red-legged *Phalacrocorax gaimardi* and Guanay Cormorants *P. bougainvillii*, Band-tailed *Larus belcheri* and Grey Gulls *L. modestus* and Inca Tern *Larosterna inca*.

Atmospheric changes caused by human activity are changing the global atmospheric and marine circulation systems in ways that we do not understand and cannot predict. Increasingly frequent and violent meteorological events, such as Hurricane Mitch and the recent 1997/98 El Niño event, are almost certainly the results what we are doing to the atmosphere. In the specific case of the birds that inhabit the Humboldt Current, the food shortages caused by El Niño are made worse by the man's other influences on the ecosystem.

The mining of Peru's huge guano deposits led to the destruction of nests and nest sites of the guano producers and caused population declines from which the species concerned have never recovered. When the guano had been exhausted, attention turned to the fish that abounded in the nutrient-rich waters and, in the 1960s, Peru's fishing industry was the world's largest. The main resource of the fishery was the anchoveta *Engraulis ringens*, which by the end of the decade was severely depleted, and the 1971 El Niño event then hit the birds that depended on the same resource. Attempts by the birds to switch to other prey species were, of course, matched by the fishing industry.

Today, with the fish stocks depleted, birds that survive the food shortages caused by El Niño events lack the resources with which to re-build their populations. The Guanay Cormorant, which once had a population of some 30 millions, now numbers less than

700,000. While the Humboldt Current is still a rich and varied place, it is only a shadow of what is used to be, and it cannot return to its former state while man's extraction of the basic resource continues.

The eight hundred and eighty first meeting of the Club was held on Tuesday, 19 January 1999, at 6.15 pm. 24 Members and 11 guests attended.

Members present were: The Rev. T. W. GLADWIN (*Chairman*) K. F. BETTON (*Speaker*), MISS H. BAKER, P. R. BELMAN, MRS D. M. BRADLEY, D. R. CALDER, CDR. M. B. CASEMENT RN, PROF. R. A. CHEKE, J. DAVIES, D. GRIFFIN, J. A. JOBLING, R. H. KETTLE, M. B. LANCASTER, I. T. LEWIS, DR C. F. MANN, D. J. MONTIER, R. G. MORGAN, MRS M. N. MULLER, R. C. PRICE, DR R. P. PRŶS-JONES, DR R. C. SELF, P. J. SELLAR, N. H. F. STONE AND CDR F. S. WARD, RN.

Guests attending were: M. BRADLEY, MRS J. B. CALDER, MRS C. R. CASEMENT, C. CARTER, MRS J. M. GLADWIN, MRS S. GRIFFIN, MS C. HOFF, MRS S. L. LEWIS, MRS P. LANCASTER, MRS M. MONTIER AND R. RANFT.

After dinner, Keith Betton gave a presentation of bird recordings, to illustrate the diversity and wide range of extraordinary sounds made by birds. Some of these tapes had been recorded by himself but the majority were from the National Sound Archive, the BBC, and other sources.

After a short cacophony of spectacular recordings from the recent BBC *Life of Birds* TV series, the audience was taken on a grand tour of the world—from the UK, the songs of Skylark, the mimicry of Starling, and Marsh Warbler, and the beauty of Nightingale (compared with Thrush Nightingale from Eastern Europe), the haunting cries of Curlew and calls of Black Grouse, Capercaillie and Puffin. From Europe we heard the bill-clattering of White Stork, and the extraordinary alarm calls of Great Bustard.

From Africa, there were examples of bill-clattering of Shoebill, the braying calls of Jackass Penguin, the distinctive cries of African Fish Eagle, Purple-crested Lourie, Red-chested Cuckoo, the duetting of Ruppell's Korhaan, and the common African sounds of Black-collared Barbet, three different species of Boubou, and Crimson-breasted Bush-shrike. The Greater Honeyguide uses calls to help it to feed—having located a bees nest, it guides mammals towards it, to encourage them to break into the nest, thus giving the Honeyguide access to the honey. From Cape Verde Islands came the haunting sounds of Cory's Shearwaters.

From the forests of the Malay Peninsula, Thailand and Indonesia came the eerie calls of Great Argus, the ubiquitous Indian Cuckoo, and Helmeted Hornbill, and the well-known mimic—the Indian Mynah; and from Papua New Guinea, the "machine-gun" like call of the Brown Sicklebill, and the extraordinary courtship display sounds of Blue Bird of Paradise.

Australasian calls included the Magnificent Riflebird, the Laughing Kookaburra, Superb Lyrebird, and from New Zealand the almost extinct flightless parrot, the Kakapo, the weird song of the Kokako, and the calls and bill-clapping of Royal Albatross.

After a quick tour of Antarctica to hear the "two-voice" calls (in two frequency bands) of Emperor and King Penguins, Keith demonstrated sounds from the Americas, with the loud "sonk" call of the Bearded Bellbird from Trinidad, the beautiful song of the Musician Wren, from North and Central America, and the amazing noises of the Calfbird, from Surinam and Brazil, and of Montezuma Oropendula from Mexico and Panama. A familiar sound from the Caribbean and Texas was the song of Great Kiskadee and, from further north, the calls of Wild Turkey. Remarkable sounds from North America are the crescendo of wing-beats of Ruffed Grouse, and the "motorbike" sounds of Sage Grouse. The world tour concluded with other familiar sounds of Northern Bobwhite, Chuck-Will's Widow, and American Bittern; and the ticking noise made by males of the controversial American import to Britain, the Ruddy Duck.

Keith ended his fascinating acoustic tour of the avian world with a recording of a Herring Gull, which he had himself recorded, aged 14, and a plea to future recordists for continued support for libraries, such as the National Sound Archive.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club will be held in the Ante-room of the Sherfield Building, Imperial College, London SW7 at 6.00 pm on Tuesday 4 May 1999.

AGENDA

1. Minutes of the 1998 Annual General Meeting (see *Bull. Bris. Orn. Cl.* 118(3): 129–133.
2. Chairman's report.
3. Report of the Committee and Accounts for 1998.
4. The *Bulletin*.
5. The election of Officers. The Committee proposes that:
   (i) Mr D. J. Montier be re-elected as Honorary Treasurer,
   (ii) Commander M. B. Casement, OBE, RN, be re-elected Hon. Secretary.
   (iii) Dr C. F. Mann and Mr J. A. Jobling be elected members of the Committee vice Dr R. P. Prŷs-Jones and N. H. F. Stone, who retire by rotation and are ineligible for re-election.
   (iv) Dr R. P. Prŷs-Jones be elected Vice-Chairman, vice Mrs A. M. Moore, who has resigned due to ill-health.
6. Any other business of which notice shall have been given in accordance with Rule (12).

Errata

In the summary of Dr Bourne's talk to the Club on 21 April 1998 (*Bulletin* 118: 133–134), the penultimate paragraph should refer to the South *African* Groundscraper, and in the last line of the summary, "phylology" should be "phylogeny".

BOOK RECEIVED

Cleere, N. & Nurney, D. 1998. *Nightjars*. Pp. 317, 36 colour plates. Pica Press. ISBN 1-873403-48-8. £30. 25 × 18 cm.

This is a long-awaited and much-needed guide to all known species of nightjar, frogmouth, owlet-nightjar, potoo and oilbird. The book is dominated by species accounts and colour plates, which occupy about 60% and 25% respectively of the 317 pages. The introductory section is surprisingly thorough, covering taxonomy, distribution, structure and mechanics (e.g. morphological and physiological adaptations), moult and behaviour, and there is even a section on the Caprimulgiformes fossil record. The inclusion of a diagram of plumage topography, a glossary of moult terms and a table describing geological periods (in the fossil record section) ensure that the book is self-explanatory. The only exception is in the brief paragraphs on structure where such terms as "palate schizognathous" and "nares schizorhinal-holorhinal" abound, but are unexplained.

In the plates, Dave Gurney has made a valiant attempt to capture the shape and plumage characteristics of a group of birds for which there is very little photographic source material. There are few opportunities to see most species in the field, not only because they are nocturnal, but because of their patchy distribution, frequently in remote parts of the world. I would praise the artist for achieving a high standard in spite of the constraints, though I expect individual species specialists may be more critical. There are up to seven, and usually at least two, individual colour paintings of the nighthawks and nightjars, showing differences between the sexes, ages or races. In general there is one large painting of each species at rest, and one or two smaller ones of the bird in flight. Frogmouths, pootoos, owlet-nightjars and the oilbird have fewer pictures per species, and lack illustrations of birds in flight. There are no illustrations of tail patterns, which is a pity, though it is explained in the text that spread tails are unlikely to be seen in the field.

The species accounts represent an enormous amount of library and museum research by the author, Nigel Cleere, who describes for each species their voice, habitat, habits, food, breeding, biometrics, moult, geographical variation, distribution and movements, and status. Key features of the bird at rest and in flight are given at the start of each species account (under "identification"), and this is expanded later under "description" to include variation between sexes and ages. The text is concise and informative, but the accounts are necessarily variable in length because for many species very little is known. Maps showing distribution are clear and well keyed.

This book is a first. No Caprimulgiphile should be without it!

Brian Cresswell

A new species of Laughingthrush (Passeriformes: Garrulacinae) from the Western Highlands of Vietnam

by Jonathan C. Eames, Le Trong Trai & Nguyen Cu

Received 1 November 1998

On the basis of field observations and museum diagnosis of three specimens collected from Mount Ngoc Linh in the Western or Central Highlands of Vietnam (Fig. 1), we here describe a new species of laughingthrush *Garrulax*. This new species resembles the polytypic Chestnut-crowned Laughingthrush *G. erythrocephalus* and, to a lesser degree, the monotypic Collared Laughingthrush *G. yersini* in its general morphology, and shares some characteristics with both of them. It appears to be allopatric with its two congeners. We demonstrate that it is a good species according to the phylogenetic and biological species concepts, and argue that *G. erythrocephalus* is a highly variable taxon which requires taxonomic revision and very likely splitting into additional species. To assign this new species to *G. erythrocephalus* would have added yet another level of variability to an already extremely variable taxon.

This new taxon occurs amongst undergrowth in montane evergreen forest between at least *c.* 2,200 and 2,200 m asl and is likely to occur in this habitat and at this altitude elsewhere in the Western Highlands, and possibly in adjacent Laos. We present notes on the ecology, behaviour and conservation of this new species. Following the recent discovery of a new species of barwing *Actinodura sodangorum* in this area (Eames *et al.* 1999), the discovery of this second new species elevates the conservation significance of the wider area to that of an Endemic Bird Area [EBA] (Stattersfield *et al.* 1998).

Mount Ngoc Linh (15°04′N, 107°59′E) at 2,598 m asl is the highest point of the Western Highlands in southern Vietnam. The geographical isolation of Mount Ngoc Linh, combined with its height, and the fact it was ornithologically unexplored, suggested that its avifauna would be interesting and worthy of investigation. Thus it was selected for survey as part of an ongoing project between BirdLife International and the Forest Inventory and Planning Institute (FIPI) which aims to ensure that all internationally important areas for biodiversity conservation are included within the revised system of protected areas.

On Mount Ngoc Linh on 1 May 1996 we observed an unfamiliar laughingthrush *Garrulax* sp. which showed striking similarity to both the Chestnut-crowned Laughingthrush *G. erythrocephalus* and the Collared Laughingthrush *G. yersini*. During the course of the following 18 days we made numerous observations of this undescribed form and obtained a specimen on 15 May 1996. Subsequently, on 17 May 1998, JCE and LTT returned to the proposed Ngoc Linh Nature Reserve to commence management planning activities. During routine biological inventory conducted on Mount Ngoc Linh up to 8 April 1998, we

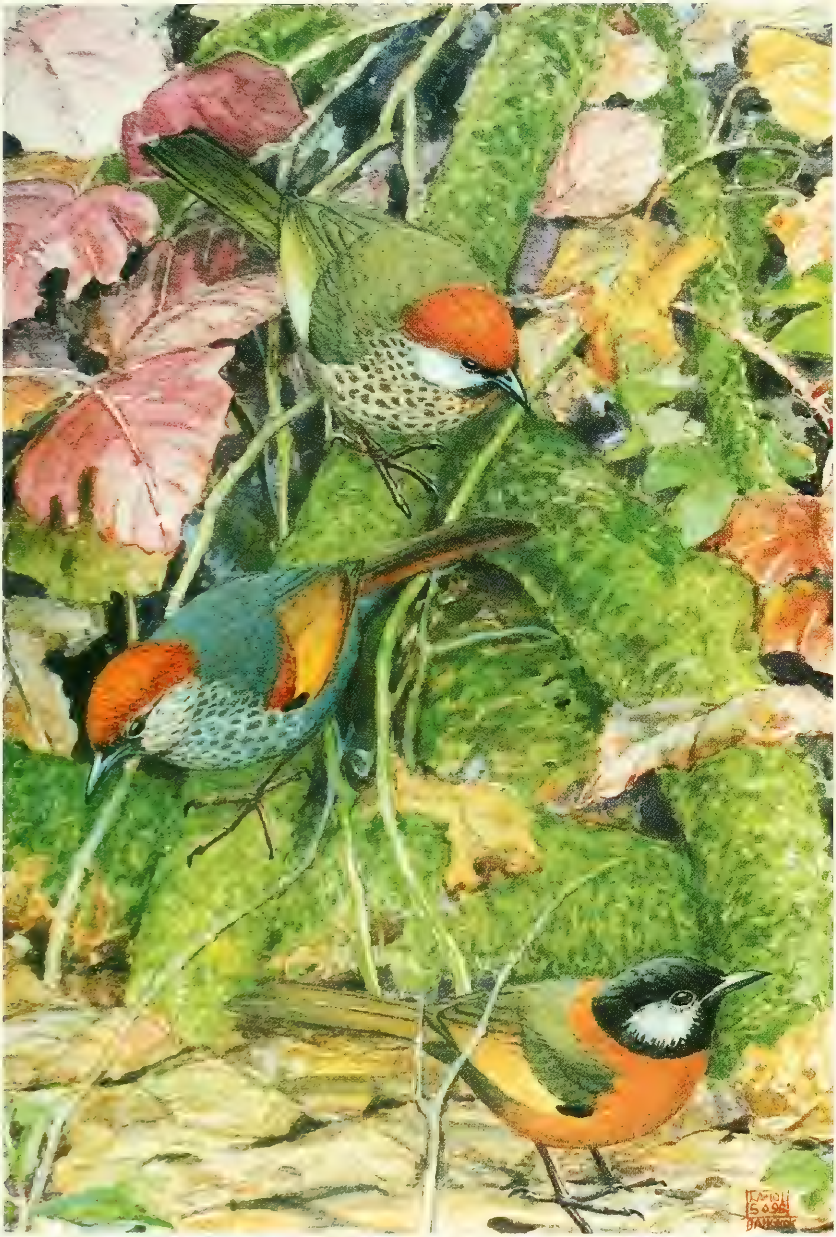
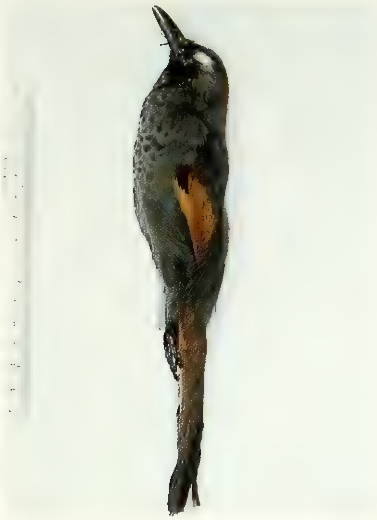
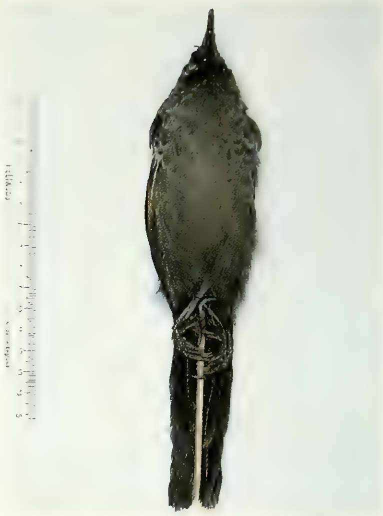


Plate 1. Adult male Golden-winged Laughingthrush *Garrulax ngoclinhensis* (centre) with Chestnut-crowned Laughingthrush *G. erythrocephalus* (above) and Collared Laughingthrush *G. yersini* (below). Original painting by Kamol Komolphalin.





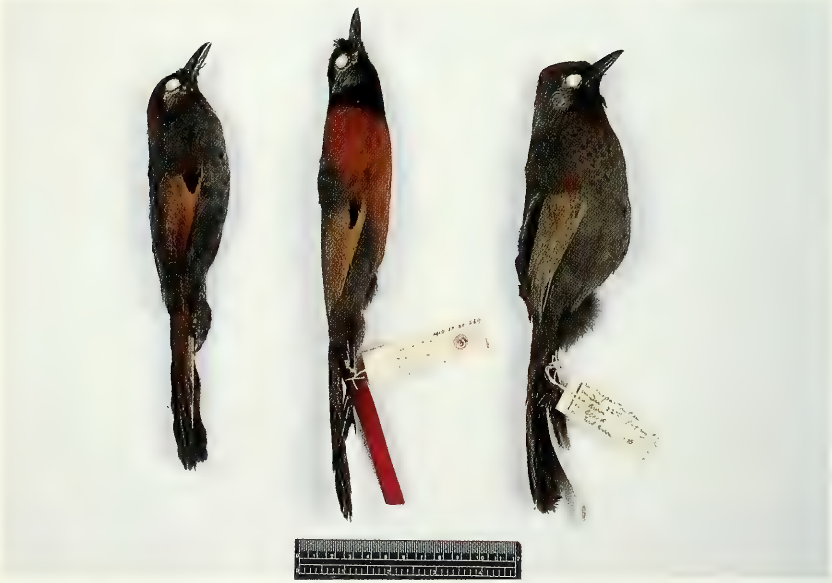
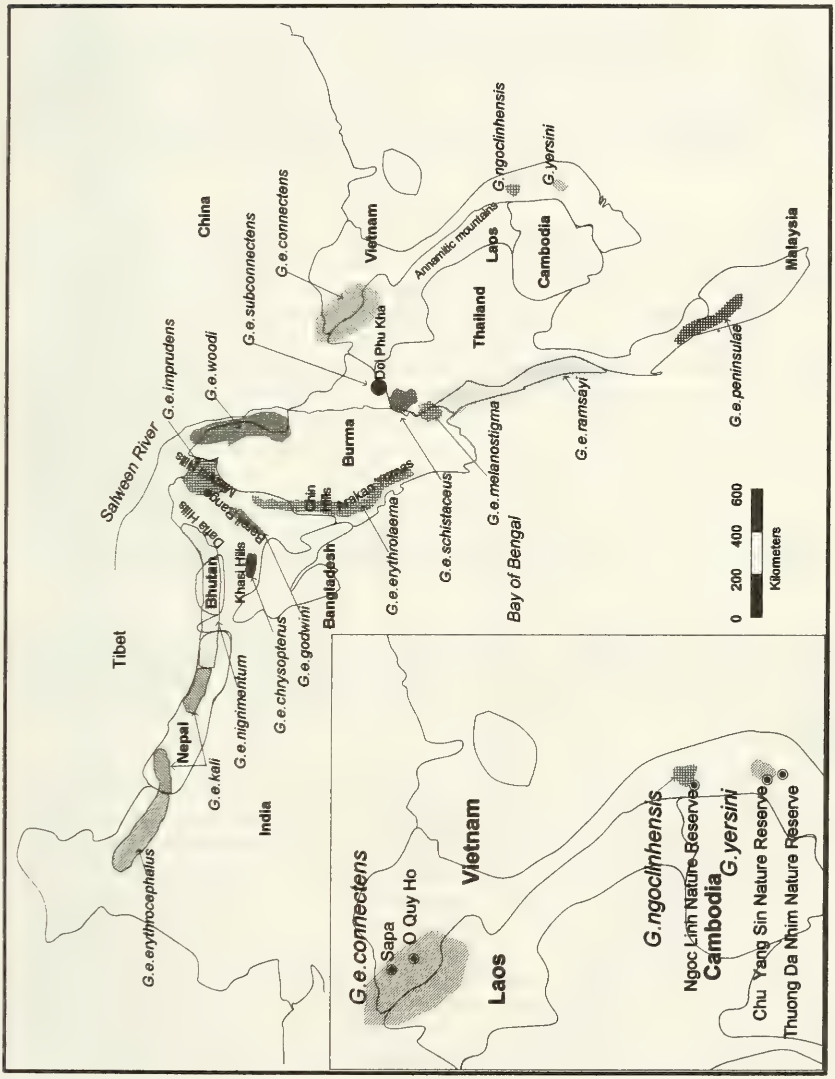


Plate 2a. Lateral view of Holotype of *Garrulax ngoclinhensis* adult male collected on Mount Ngoc Linh on 15 May 1996. The golden remiges contrasting with the black primary coverts can clearly be seen. Photo: Harry Taylor.

Plate 2b. Ventral view of Holotype of *Garrulax ngoclinhensis* adult male collected on Mount Ngoc Linh on 15 May 1996. Photo: Harry Taylor.

Plate 2c. Lateral view of Holotype of *Garrulax ngoclinhensis* (left) with Holotype of *G. yersini* (centre) and *G. erythrocephalus connectens* (right). Photo: Harry Taylor.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Laos
Vietnam
Cambodia
Malaysia
Salween River
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Khasi Hills
Barail Range
Naga Hills
Chin Hills
Arakan Yomas
Annamitic mountains
Doi Phu Kha
Bay of Bengal
G.e.erythrocephalus
G.e.kali
G.e.nigrimentum
G.e.chrysopterus
G.e.godwini
G.e.imprudens
G.e.woodi
G.e.subconnectens
G.e.connectens
G.e.erythrolaema
G.e.schistaceus
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O Quy Ho
Vietnam
Laos
G.ngoclinhensis
Ngoc Linh Nature Reserve
Cambodia
G.yersini
Chu Yang Sin Nature Reserve
Thuong Da Nhim Nature Reserve

Figure 1. Approximate ranges of *Garrulax erythrocephalus*, *G. ngoclinhensis* and *G. yersini* and localities mentioned in the text.

collected two additional specimens from the same locality. Comparison of two of the three with material in The Natural History Museum, Tring (U.K.) in August 1996, 1997 and 1998 by JCE showed that this bird represents a new species with the genus *Garrulax*, which we name:

Golden-winged Laughingthrush *Garrulax ngoclinhensis*, sp. nov.

Holotype. Deposited in The Natural History Museum, Tring (BMNH No. 1997.7.7), adult male collected on Mount Ngoc Linh (15°04′N, 107°59′E), Kon Tum Province, Vietnam (Fig. 1), at *c.* 2,200 m asl on 15 May 1996 (Plate 1, 2). Enlarged testes, body moult and subcutaneous fat noted.

Diagnosis. Garrulux ngoclinhensis most closely resembles *G. erythrocephalus* but shares the combination of black primary coverts and golden outer webs (edgings) of the remiges with *G. yersini* (Plate 1 & 2c). *Garrulax ngoclinhensis* differs from all 14 races of *G. erythrocephalus* in having a dark grey breast, belly, mantle and back, golden outer webs to the remiges, and golden-brown outer webs of the rectrices. *Garrulax ngoclinhensis* differs from the eight *G. erythrocephalus* taxa which occur west of the Salween River (except *G. e. woodi*) by the absence of black or dark brown scaling on the mantle and breast, the presence of a black alula (absent in *G. e. connectens*), and the absence of buff, brown or olive tones in its plumage. It differs from the six forms of *G. erythrocephalus* occurring east of the Salween River in the absence of rich olive, green, dark chestnut and cinnamon tones in the body plumage (excluding the crown).

Description of the holotype. In the following description, a subjective description of a colour is given, followed whenever appropriate by capitalized colour nomenclature and the number as given in Smithe (1975). Where no suitable match could be found, the closest colour is given together with a clarification.

Upperparts: Forehead grey tinged brown (Glaucous 79 and Cinnamon Brown 33) with blackish brown central shaft streaks extending over and behind the eye on to the sides of the head. The centre of the crown, hind-crown and nape are chestnut (Kingfisher Rufous 240, Robin Rufous 340, Raw Sienna 136 and Amber 36, are closest but all are insufficiently orange). The crown feathers are grey with broad chestnut fringes. The mantle, back and rump are grey with a slight olive tinge (Glaucous 79 is closest but lacks olive and is too light). The upper tail coverts are grey tinged slightly more strongly olive-brown than the rest of the upperparts (Brownish Olive 29 and Olive 30 are closest). The graduated tail is comprised of 12 rectrices. The upper surfaces of the tail feathers are olive-brown (Vandyke Brown 121 is closest). The outer webs are tinged golden-brown (Amber 36 but yellower) which is more pronounced in extent and intensity on the basal half of the outer webbing. The underside of the tail is dark brown (Sepia 119) with an iridescent sheen.

Wings: The lesser and median coverts are grey with a slight olive tinge (Glaucous 79 is closest). The greater coverts are olive and are broadly tipped chestnut. The outer web of the alula is golden (Orange Yellow 18) with a slight olive tinge, while its inner web is black. The primary coverts are black. The outer webs of the primaries and secondaries are golden along their basal halves, grading to chestnut-brown (Raw Sienna 136 and Amber 36 are closest). The degree of golden-olive along the length of the secondaries becomes more extensive along the inner secondaries and tertials. The inner webs are dark brown with an iridescent sheen, except the innermost two tertials which show olive (Greyish Olive 43) inner webs. Primaries four to seven (numbered ascendantly) are emarginated along their outer web.

Face and underparts: The lores are black, with black extending over the eye. The auriculars beneath the eye are black with irregular chestnut flecking. The ear-coverts are grey (Smoke Gray 45), suffused pink with indistinct darker central shaft streaks. The chin is black becoming grey mixed with olive (Dark Drab 119B), with black central shaft streaks and small irregular chestnut flecks on the throat. The centre and sides of breast are grey (Glaucous 79) with pale silvery-grey fringes producing a scalloping effect. The belly to vent is grey tinged olive-brown (Olive 30).

Bare parts: Bill blackish horn; legs dark brown; iris dark brown.

Measurements of type (lengths in mm): Maxilla (from skull) 26; tarsus 35; wing (max. chord) 106; tail 121.

Paratypes. Two additional specimens collected on Mount Ngoc Linh at 2,000 m asl on 31 March 1998 are a male held at FIPI, Hanoi, No. 1945.2.10 and a female, Natural History Museum, Tring No. 1998.71.6. Their measurements (lengths in mm) are, respectively: maxilla (tip to skull) 19, 25; tarsus 33, 36; wing (max. chord) 88, 99; tail 137, 112. Specimen No. 1945.2.10 had an iris colour recorded as black; bill blackish horn; legs dark brown. Specimen No. 1998.71.6 had a dark brown iris; bill blackish horn; legs dark brown with paler soles. The holotype is slightly brighter and shows more red in the chestnut crown and has more olive underparts than the female paratype, but overall no significant differences in plumage exist among the three known specimens.

Vocalizations. At *c*. 2,000 m asl on Mount Ngoc Linh on 1 May 1996 JCE recorded a *G. ngoclinhensis* giving a two-noted rather cat-like mewing, with emphasis on the second note. The first note was short (less than 1 s) and descending whilst the second was longer (1.5 s), rising and with a slight downward inflection at the end. The call could be rendered as *Rr raow Rr raow*. The calls were given at intervals of 2–3 s and calling bouts lasted for more than one minute. No *G. ngoclinhensis* were knowingly heard subsequently during 1996 or during fieldwork in 1998.

Since only one call of *G. ngoclinhensis* was recorded and is described here, this is insufficient evidence to determine whether this is its song or whether it possesses a range of vocalizations (as seems likely) which may or may not be significantly different from its closest congeners.

Ecology and behavior. All observations were of single birds or pairs, and one was seen in association with a party of three Red-tailed Laughingthrushes *G. milnei* on 18 May 1996. All observations were between 2,000 and 2,200 m asl. The species occurred almost exclusively in the herb and shrub layers of forest undergrowth. The species was shy and difficult to observe but responded to playback of its call and several observations were made using this technique. Overall, *G. ngoclinhensis* appeared quite typical of the genus in its habits.

Habitat. On Mount Ngoc Linh we found *G. ngoclinhensis* in the undergrowth of primary formations of upper montane evergreen forest (as defined in Whitmore 1992). On Mount Ngoc Linh from *c.* 1,500 to 2,200 m asl the forest canopy height was 10–15 m, with occasional 20 m trees. Above 2,200 m asl, the trees were generally smaller and more slender, with knarled limbs and dense sub-crowns, and there was much moss on trees and the ground. The transition from lower to upper montane forest formations was gradual, however, and many larger trees existed to within 100 m of the summit.

Distribution. *G. ngoclinhensis* was discovered on Mount Ngoc Linh (Kon Tum Province) in the Western Highlands of Vietnam and is currently known only from this site (Fig. 1). We believe it is likely to occur to the north and east in adjacent Quang Nam Province because the provincial boundary bisects Mount Ngoc Linh, and forest habitat within the species' altitudinal range is contiguous across the provincial border on the mountain. Suitable forest habitat within the species' altitudinal range also occurs in neighboring Attapu and Se Kong Provinces in Laos where we expect the species will eventually be discovered. *G. ngoclinhensis* is currently only known from one site to which it may be endemic, although considering the distributions of other *Garrulax* species, this seems unlikely. The range of *G. e. connectens* is known to extend south to only northern Laos, and *G. yersini* is believed to be endemic to a small area in the Da Lat Plateau EBA at the southern limit of the Western Highlands. The absence of a contiguous mountain chain south to the Da Lat Plateau virtually rules out any contact with *G. yersini*. We do not know how far north *G. ngoclinhensis* could extend in the Annamitic Mountains and how far south *G. erythrocephalus connectens* may extend through the same mountain chain.

Etymology. We name this species after the type locality Mount Ngoc Linh which at 2,598 m asl is the highest point in the Western Highlands and the second highest peak in Vietnam. The literal translation from Vietnamese to English is "sacred precious stone". This little-studied area is proposed as a nature reserve and this is the first species to be named after the site.

Remarks

Under this heading we present the case for affording specific rank to *G. ngoclinhensis* based on its morphology, biometrics, ecology and vocalizations in comparison with its closest congeners: *G. erythrocephalus* and *G. yersini*.

Deignan (1964) recognized 14 taxa within *G. erythrocephalus*. Table 1 shows a simplified summary of the general morphology of all 14 forms of *G. erythrocephalus*, as well as *G. ngoclinhensis* and *G. yersini*, based on an examination of skins of 12 *G. erythrocephalus* taxa in the Natural History Museum, Tring and with reference to the literature in the case of *G. e. schistaceus* and *G. e. subconnectens* (Deignan 1938). Across its wide range in the Indo-malayan realm, *G. erythrocephalus* is highly variable, and the variation in plumage pattern is in some cases clinal and others abrupt and mosaic. Amongst the 14 described forms crown, wing and tail colouration are fairly constant across its geographic range. All forms show chestnut on the hind crown but in some forms there is also a tendency to black, grey and silver streaking on the forecrown. Additionally, all forms retain olive-green remiges and rectrices, with a slight variation in the intensity of green from west to east and from north to south. The nominate and most westerly form retains the most yellow in the wing, whereas the southernmost form *G. e. peninsulae* has the greyest wing. The eight Himalayan forms, i.e. those with their ranges entirely west of the Salween River, are characterized by bold scaling on the mantle and breast and most show a predominance of buff, brown and olive tones in the plumage. The six forms east of the Salween River (*G. e. melanostigma* is included in this group even though part of its range lies west of the Salween River because of plumage similarities with the eastern group) all have unstreaked upperparts. Only *G. e. connectens, G. e. subconnectens* and *G. e. schistaceus (shanus)*, show faint scaling on the breast, created by pale feather fringes. Of the six eastern forms, all except *G. e. connectens* show black primary coverts. Their predominant plumage tones are olive and green, and in the case of *G. e. peninsulae*, dark chestnut and cinnamon.

Although more similar to the Indochinese races of *G. erythrocephalus, G. ngoclinhensis* is morphologically sufficiently distinct to warrant specific treatment for the following reasons: *G. negoclinhensis* shows three unique plumage features and also shares a distinctive combination of plumage features with *G. yersini*, which are not shown by any form of *G. erythrocephalus*. Thus *G. ngoclinhensis* is intermediate between these two taxa.

In comparison with *G. erythrocephalus* and *G. yersini, G. ngoclinhensis* has on average a shorter maxilla than *G. e. connectens* but longer than *G. yersini* (Table 2). Its tarsus and wing average shorter

TABLE 1

Summary of plumage features in *G. erythrocephalus*, *G. ngoclinhensis* and *G. yersini*

Taxon	Crown	Mantle	Breast	Ear-coverts	Tail edgings	Wing edgings	Primary coverts	Greater coverts
G. e. erythrocephalus	Chestnut	Olive-green, scaled black	Olive-buff, scaled black	Chestnut, black centres, fringed white	Olive-green	Olive-yellow	Olive-green	Olive, fringed chestnut
G. e. kali	Chestnut	Olive-green, scaled black	Olive-buff, scaled black	Chestnut, black centres, fringed white	Olive-green	Olive-grey-green	Olive-grey-green	Olive, fringed brown
G. e. nigrimentum	Black, fringed grey, chestnut	Brown, scaled black	Brown, scaled black	Black fringed white	Olive-green	Olive-green	Olive-green	Brown, tipped chestnut
G. e. imprudens	Chestnut and black	Olive-grey, scaled black	Olive, scaled black on upper breast	Olive with black centres	Olive-green	Grey suffused green	Olive-green	Olive, tipped chestnut
G. e. chrysopterus	Silvery-grey and chestnut	Olive-brown, scaled black	Light brown, scaled dark brown	Silvery-grey	Olive-green	Olive-green, yellow sheen	Olive-green, yellow-sheen	Olive, tipped chestnut
G. e. godwini	Silvery-grey and chestnut	Olive-brown, scaled black	Cinnamon, fringed black	Pinkish	Olive-green	Olive-yellow	Olive-yellow	Olive, tipped chestnut
G. e. erythrolaema	Grey and chestnut	Olive-green, scaled black	Olive-buff scaled black	Cinnamon	Olive-green	Olive-green	Olive-green	Olive, tipped chestnut
G. e. woodi (forresti)	Grey, black centres and chestnut	Brown, pale fringes	Brown, pale fringes	Silvery-pink	Olive-green	Olive-green	Olive-green	Chestnut
G. e. connectens	Chestnut	Olive-grey-green	Brown fringed olive-grey	Silver grey with dark shaft streaks	Olive-green	Olive-green	Olive-green	Olive, fringed chestnut
G. e. subconnectens	Chestnut	Greyish-olive	Olive-grey scaled brownish-grey	Dusky-brown, silvery or pinkish grey edgings	?	?	Black	?
G. e. schistaceus (shanus)	Chestnut	Olive-grey-green	Dark chestnut, light olive-brown	Blackish with silvery-grey edges	Olive-green	Olive-green	Black	Grey-green tipped chestnut
G. e. melanostigma	Chestnut	Olive-grey-green	Dark chestnut, light olive-brown	Blackish with silvery-grey edges	Olive-green	Olive-green	Black	Grey-green tipped chestnut
G. e. ramsayi	Chestnut	Olive-brown-green	Dark chestnut, pale cinnamon	Blackish with silvery-grey edges	Olive-green	Olive-green	Black	Grey-green tipped chestnut
G. e. peninsulae	Dark chestnut	Dark olive-brown	Dark chestnut and cinnamon	Brown with silvery-grey edges	Olive-green	Olive-green	Black	Dark chestnut
G. ngoclinhensis	Grey and chestnut	Grey, olive tinge	Grey fringed pale grey	Grey suffused pink	Olive-grey strongly suffused golden	Golden	Black	Olive, tipped chestnut
G. yersini	Black	Orange chestnut	Pale orange chestnut	Silvery-grey	Golden	Golden	Black	Grey, chestnut fringes

TABLE 2

Comparison of biometrics amongst *Garrulax erythrocephalus connectens, G. yersini* and *G. ngoclinhensis* based largely on specimens in the Natural History Museum, Tring. In each cell the biometric range is given, followed by the mean and finally the sample size. All measurements are in mm

Taxon	Maxilla (tip to skull)	Tarsus	Wing (max. chord)	Tail	Sex
G. e. connectens	23–26 (24.0) [10]	36–39 (37.7) [10]	96–110 (104.4) [10]	109–126 (114.9) [10]	4 m, 4 f, 2?
G. ngoclinhensis	19–26 (23.3) [3]	33–36 (34.6) [3]	88–106 (97.6) [3]	112–137 (123.3) [3]	2 m, 1 f
G. yersini	21–24 (22.5) [8]	36–41 (38.6) [8]	101–118 (111.6) [8]	118–133 (122.7) [8]	4 m, 4 f

than its closest two congeners, but its tail is longer than of *G. e. connectens*. There is, however, extensive overlap in biometrics within these two species and sample sizes are too small to show significant differences.

Under the phylogenetic species concept a species is defined as an irreducible (basal) cluster of organisms, diagnosably distinct from other such clusters and within which there is a parental pattern of ancestry and descent (Cracraft 1989). The possession of only one diagnostic character would mean that the new taxon could be considered a species under the phylogenetic species concept. We prefer however, to approach the question of appropriate taxonomic rank for this taxon using the biological species concept. Under the biological species concept a species comprises groups of interbreeding natural populations that are reproductively isolated from other such groups (Mayr 1969), and under this concept both *G. erythrocephalus* and *G. yersini* have been considered to comprise good species by Deignan (1964), Sibley and Monroe (1990) and Inskipp *et al.* (1996). With a case for specific rank already established on the basis of morphology, we now consider the ecology and the sexual behaviour of species, especially the development of a unique song, which are the two other criteria often subjectively used to demonstrate reproductive isolation.

The known range of *G. ngoclinhensis* is *c.* 700 km south from that of *G. erythrocephalus* and *c.* 300 km north of the range of *G. yersini*. We believe, that *G. ngoclinhensis* is allopatric with both *G. erythrocephalus* and *G. yersini* and therefore reproductively isolated. In the absence of any data for their ranges meeting or overlapping, it is only possible to assess the taxonomic status of *G. ngoclinhensis* as if it were allopatric. However, if the ranges of these two species were to meet, would reproductive isolation be maintained in sympatry?

We currently only have the briefest indications of the habitat and altitude range of *G. ngoclinhensis* but in both it shows strong similarities with its closest congeners. Amongst the forms of *G. erythrocephalus* occurring east of the Salween River *G. e. melanostigma* was collected in dense evergreen or bamboo forest between 1,310–2,560 m asl, *G. e. schistaceus* was obtained in dense evergreen forest between 1,524–2,133 m asl, *G. e. subconnectens* in heavy evergreen forest between 1,371–1,676 m asl, whilst *G. e. connectens* was collected at 2,000 m asl (Delacour & Jabouille 1931, Deignan 1945), and *G. e. peninsulae* was recorded frequenting the ground and lower storeys of montane forest above 1,066 m (Medway & Wells 1976), *Garrulax yersini* again inhabits undergrowth in evergreen forest from 1,800 to 2,500 m asl (Delacour & Jabouille 1931). Thus on the basis of the available data, these three species occupy overlapping altitudinal ranges.

Vocalization, specifically song, is also traditionally used to confirm specific rank. Although we are not able to provide any conclusive evidence, we believe that even if the songs of *G. ngoclinhensis* and *G. erythrocephalus* proved to be identical this would not in itself disprove the validity of *G. ngoclinhensis* as a good species, especially (as seems likely) if it is allopatric with *G. erythrocephalus*. In allopatric species, there may be no evolutionary mechanism, which leads to the development of distinctive song, at work. Thus, two taxa may be distinctive species although they may have identical songs. This is a documented phenomenon among closely related species of *Garrulax*: The Bare-headed Laughingthrush *G. calvus* of Borneo has a song identical with Black Laughingthrush *G. lugubris*, which is endemic to the Malay peninsula and Sumatra. Despite their dissimilar appearance and being allopatric, it has been suggested that they are conspecific because a positive response was elicited from one species when played the call of the other (Harrap 1992). In this case there would have been no evolutionary advantage for the two taxa to evolve distinctive songs since they are spatially separated. Furthermore, closely related species of *Garrulax* will respond to songs of their congeners anyway, especially as they often flock together. On Mount Ngoc Linh a small flock of *G. milnei* responded to a tape of *G. ngoclinhensis* and at O Quy Ho near Sa Pa in north-west Vietnam, several *G. milnei* responded to a *G. erythrocephalus* duetting with a Red-faced Liocichla *Liocichla phoenicea* (JCE pers. obs.). Additionally, *Garrulax* vocalizations are difficult to use as taxonomic characters because of mimicry and variability of repertoires.

In conclusion, our case for the validity of *G. ngoclinhensis* as a good species rests on its distinctive morphology, and its reproductive isolation is suspected but unproven. Furthermore, from the data presented, we can conclude that *G. erythrocephalus* is an extremely variable taxon and that the Salween River is a natural divide between the eight Himalayan subspecies from the five Indochinese and sole sundaic subspecies. On this basis, consideration should therefore be given to splitting *G. erythrocephalus* into two (or more) species. A thorough taxonomic revision of the phylogeny of *G. erythrocephalus*. *G. ngoclinhensis* and *G. yersini* group would be required to resolve this question. Given this context, to have described *G. ngoclinhensis* as a mere subspecies of *G. erythrocephalus*, rather than a species, would have added another level of variability to what is already an extremely variable taxon.

Conservation

The forests of the proposed Ngoc Linh Nature Reserve comprise a mosaic of primary and seral forest formations, and shifting cultivation, indicating a long history of human utilization. During the 1996 fieldwork there was no evidence of recent forest clearance for new terraces around Mount Ngoc Linh. In 1998, however, we saw recently burnt patches of secondary forest which were being prepared for agriculture. In the west of the proposed nature reserve along Highway 14, the forest has been recently cleared for shifting cultivation, although this is below the species's known altitudinal range. Following a boundary revision, the proposed Ngoc Linh Nature Reserve now extends across 41,420 ha, of which 35,869 ha (87% of the total area) were classified by FIPI in 1995 as covered with forest (all categories). Of this 24,665 ha (60%) was classified as primary forest (Le Trong Trai *et al.* 1999). Although the modification to the boundary represents a 38% reduction in the area of the nature reserve as proposed earlier by FIPI (Eames *et al.* 1999), the new boundary excludes agricultural lands and all human settlement. It is intended that this revision will facilitate better conservation management in the area. The absence of data on population size, trend and distribution, indicate that *Garrulax ngoclinhensis* must be categorized as Data Deficient (IUCN 1994). On the limited available evidence the species appears to occur above the upper limit of shifting cultivation so is not currently threatened by this human activity.

The discovery of a second new species of bird from the Mount Ngoc Linh area means that the area now meets the criteria for EBA designation. This elevates the conservation status of the northern mountains of the Western Highlands of Vietnam (and probably adjacent Laos) to that of an EBA (Eames, unpublished). It is imperative that the importance of this area is drawn to the attention of government and that an adequate system of protected areas is developed. This programe of work will be best initiated by a series of field surveys in Kon Tum and Quang Nam Provinces in Vietnam, and Sekong and Attapu Provinces in Laos to obtain additional baseline data. Throughout this paper we refer to the proposed Ngoc Linh Nature Reserve since although the site was included on a list of protected areas endorsed by the Government of Vietnam for protected area establishment in 1986, as of 1 January 1999 the management plan proposing its boundaries had not been approved.

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Contract VNM/B7-6201/IB/96/005 during 1998. The Commission of European Communities (DGI) funded both projects, and BirdLife International also funded the latter project.

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Additional bird records for Oaxaca, Mexico

by José Eduardo Morales-Pérez

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The largest diverse avifauna in Mexico exists in the state of Oaxaca. A thorough survey of the birds of this Mexican state was published by Binford (1989), where he stated that specimens of 20 museums were consulted. However, in his hypothetical list, Binford included some species based only on sight records, and others for which he considered the evidence unsatisfactory, such as those specimens reported by Mario del Toro Avilés, which Binford regarded as untrustworthy. Parkes (1990) provided additional distributional information of 19 species not listed by Binford, from specimens deposited in the collection of the Carnegie Museum of Natural History. The purpose of this paper is to provide information on specimens of 30 species from Oaxaca at the ornithological collections of the former Instituto Nacional de Investigaciones sobre Recursos Bióticos (INIREB). At present, those collections are in the care of the Instituto de Historia Natural (IHN) de Chiapas, Mexico.

While reorganizing and recataloging the ornithological collection, I encountered several specimens from Temascal, at Presa Miguel Alemán (the dam), Oaxaca (18°15′N 96°24′W; figure 1) collected by Mario A. Ramos; this is the locality of most specimens, unless indicated otherwise. In this paper, the species of interest are listed and discussed briefly in some cases. Nomenclature and common names in English follow the American Ornithologists' Union (AOU 1983). The Spanish common names are from Escalante *et al.* (1996). All specimens were preserved as study skins; information on moult and fat is referred here as light, moderate, or heavy. The main habitats were obtained from the cartographic information of the Secretaría de Programación y Presupuesto (SPP 1980) and are: Second Growth Evergreen Seasonal Forest, Evergreen Seasonal Forest and Seasonal Croplands.

Species accounts

BARE-THROATED TIGER-HERON. **garza-tigre mexicana** *Tigrisoma mexicanum*

Binford (1978: 78) listed records of this species for the Atlantic region only in the vicinity of the Isthmus, where he considered it common. The following records extend the range in Oaxaca to the northwestern section in the Atlantic region: (IHN 1551), female, 2 July 1980, 1,000 g., light fat, light moult, skull ossified; (IHN 1548), male, 5 August 1980, unweighed, no fat, no moult, skull ossified; (IHN 1549), female, 26 August 1980, 1,100 g., no fat, light moult; (IHN

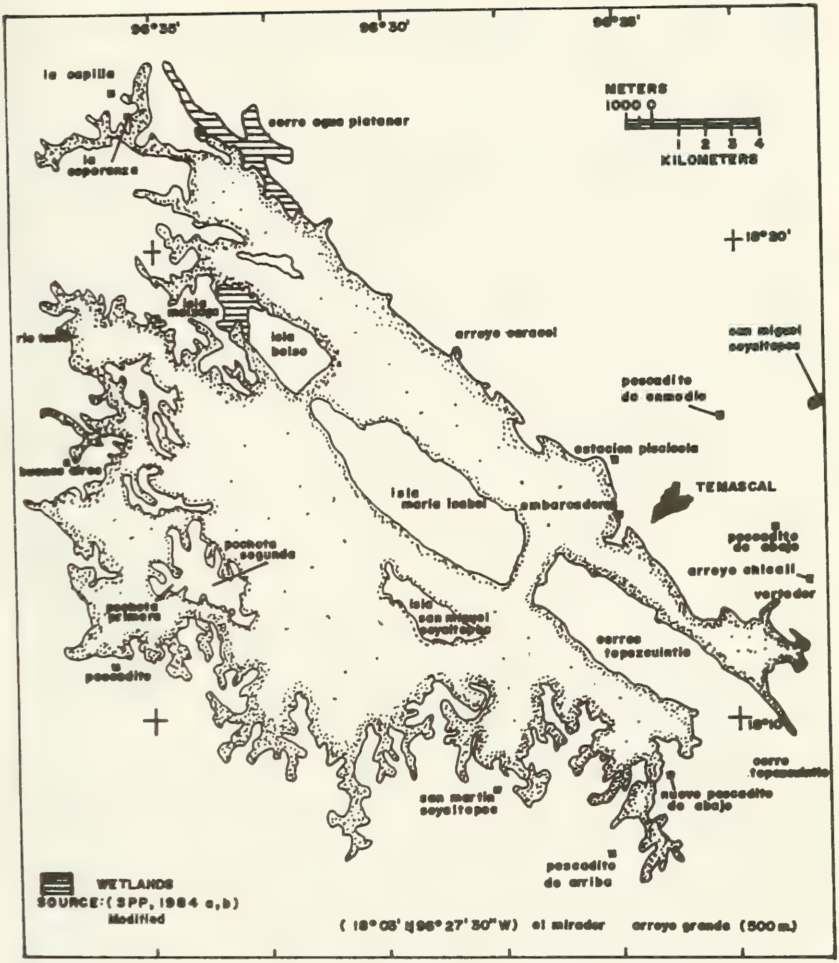
96°35'
96°30'
96°25'
la capilla
la esperanza
cerro agua platanar
METERS
1000 0
1 2 3 4
KILOMETERS
18°20'
isla balsa
rio tonto
arroyo caracol
san miguel soyaltepec
pescadito de enmedio
estacion piscicola
buenos aires
TEMASCAL
isla maria isabel
embarcadero
pescadito de abajo
pochota segunda
arroyo chicali
vertedor
pochota primera
isla san miguel soyaltepec
cerros tepezcuintle
pescadito
18°10'
cerro tepezcuintle
nuevo pescadito de abajo
san martin soyaltepec
pescadito de arriba
WETLANDS
SOURCE: (SPP, 1984 a,b)
Modified
(18°05' N 96°27'30" W) el mirador
arroyo grande (500 m.)

Figure 1. Localities cited in text. (Miguel Alemán Dam.)

1547), male, 13 August 1981, 1,345.4 g., light fat, heavy moult, skull ossified.

TRICOLORED HERON. garceta tricolor *Egretta tricolor*

Binford (1989: 318) considered this species as restricted to the Pacific coast. The following specimens represent the first records for the Atlantic region and extend the known winter distributional range 300 km north: (IHN 1588), male, 8 April 1980, 100 g., moderate fat, skull ossified; (IHN 1589), male, 26 March 1981, no fat, no moult, skull ossified; (IHN 1590), male, no date, 444.2 g., no fat, no moult, skull ossified.

BLACK-CROWNED NIGHT-HERON. **pedrete corona negra** *Nycticorax nycticorax*

Although Blake (1977), cited this heron as a breeding and generally resident bird from northern United States and southern Canada southward locally through Mexico, Binford (1989) recorded this species only as a winter resident, and possibly a permanent resident and mentioned only one specimen (USNM 59780) collected in 1869. He listed also two sight records from Presa Miguel Alemán. Erickson and Hamilton (1993), reported two individuals flying over Tehuantepec City in the Pacific region. Specimens in IHN reinforce its presence as a breeding bird in the Atlantic region: (IHN 1614), female, 30 June 1980, 750 g., moderate fat, no moult, skull ossified; (IHN 1610), female, 26 August 1980, 548.5 g., no fat, heavy moult, skull not ossified; (IHN 1611), male, 26 August 1980, 525.7 g., no fat, heavy moult, skull partially ossified; (IHN 1612), Southwest Soyaltepec, unsexed, 8 October 1980, 635.8 g., no fat, no moult, skull ossified; (IHN 1613), 15 km. South Chicali, male, 17 March 1981, 582.7 g., no fat, light moult, skull partially ossified; (IHN 1615), Embarcadero, male, 24 August 1980, 676 g., no fat, no moult, skull ossified; (IHN 1616), male, 30 June 1980, 750 g., light fat, no moult, skull ossified; (IHN 1617), male, 30 June 1980, unweighed, no fat, no moult, skull ossified; (IHN 1618), male, chick, 29 July 1980, 146.2 g., no fat, heavy moult, skull not ossified; (IHN 1619), unsexed, chick, 29 July 1980, 27.9 g., no fat, no moult, skull not ossified; (IHN 1620), unsexed, chick, 29 July 1980, 89.5 g., no fat, heavy moult, skull not ossified.

FULVOUS WHISTLING-DUCK. **pijije canelo** *Dendrocygna bicolor*

Binford (1989) had no specimens and cited only three acceptable sight records for the Pacific region from January to 28 April. Specimens listed herein are the first for Oaxaca and confirm its presence in the state and extend its distributional range to the east. Loetscher (1955) reported this species from Veracruz as regular, but very local, in winter: (IHN 1631), female, 14 September 1980, 626 g., moderate fat, heavy moult; (IHN 1632), 1 km northwest Soyaltepec, male, 22 May 1982, 800 g., light fat, testes enlarged, member of a pair on a small island.

RUDDY DUCK. **pato tepalcate** *Oxyura jamaicensis*

Binford (1989), has recorded this species as a very uncommon winter resident based on one published specimen record and four definite sight records. Specimens listed herein are: (IHN 1676), north of Cerro Bolso, male, 29 August 1980, 647 g., moderate fat, heavy moult, skull ossified, testes enlarged; (IHN 1677), Soyaltepec, male, 24 July 1982, 511.5 g., moderate fat, light moult, skull ossified.

SNAIL KITE. **gavilán caracolero** *Rosthramus sociabilis*

Binford (1989) cited only one Oaxaca specimen (WFVZ 169) from Tapanatepec (16°22′94°13′) and several sight records, all from the

Isthmus of Tehuantepec. This specimen extends its distributional range to the northeastern section: (IHN 1681), female, 26 June 1980, 532.5 g., no fat, light moult, skull ossified, ovary enlarged.

RUDDY CRAKE. **polluela rojiza** *Laterallus ruber*

Recorded at only one definite locality in the Atlantic region at a point about 3 km east of Sarabia (Binford 1989). The specimen extends its distributional range 200 km NW: (IHN 1695), female, 11 April 1980, 45 g., no fat, no moult, skull partially ossified.

COMMON MOORHEN. **gallineta frente roja** *Gallinula chloropus*

This species was recorded by Binford (1989) as a winter resident in shallow freshwater habitats, possibly a rare and local permanent resident and recorded only in the lowest portions of the Atlantic and Pacific regions. Specimens included in this paper suggest, by virtue of date, that the species could be a permanent resident in this area: (IHN 1701), Soyaltepec Island, male, 29 July 1980, 351.5 g., no fat, moderate moult, skull ossified; (IHN 1702), male, 29 July 1980, 349.7 g., no fat, no moult, skull ossified; (IHN 1703), male, 26 May 1980, 250 g., light fat, light moult, skull ossified, testes enlarged; (IHN 1704), Capilla, male, 13 April 1982, 294 g., no fat, moderate moult, skull ossified; (IHN 1705), male, 26 August 1980, 372.4 g., no fat, heavy moult, skull partially ossified.

AMERICAN COOT. **gallareta americana** *Fulica americana*

This species was expected in the Atlantic region by Binford (1989). These specimens provide the first fall records and suggest that the species is a permanent resident in the area: (IHN 1706), female, 19 September 1980, 449.4 g., light fat, heavy moult, skull ossified; (IHN 1707), female, 14 April 1982, 505 g., heavy fat, light moult, skull ossified, ovary slightly enlarged; (IHN 1708), Buenos Aires, female, 4 December 1981, 477.7 g., no fat, no moult, skull ossified, ovary slightly enlarged; (IHN 1709), male, 22 May 1980, 750 g., light fat, heavy moult, skull ossified; (IHN 1710), female, 29 August 1980, 413 g., no fat no moult, skull ossified, ovary slightly enlarged; (IHN 1711), Capilla, female, 13 April 1982, 531.5 g., heavy fat, light moult, skull ossified; (IHN 1712), female 1 April 1980, light fat, light moult, ovary slightly enlarged; (IHN 1713), female, 30 June 1980, light fat, heavy moult, skull ossified; (IHN 1714), female, 8 April 1980, 500 g., heavy fat, no moult; (IHN 1715), male, 8 April 1980, 500 g., moderate fat, no moult.

SUNGREBE. **pájaro cantil** *Heliornis fulica*

Lowery & Dalquest (1951) reported this species as common on the rivers of southern Veracruz and slightly less so in central Veracruz. Although Binford (1989), considered it as a rare permanent resident, he cited as the only reliable records those from 15 km north of Matías Romero (16°53′N, 95°02′W – WFVZ-HC 4874 –); (MLZ 51362) from Loma Bonita (18°07′N, 95°53′W) and another (MVZ 133473) from 27 km north of Matías Romero. All records included herein support its presence in the Atlantic region and provide additional localities: (IHN 1716), Vertedor, male, 10 March 1982, 153 g., moderate fat, light moult, skull partially ossified; (IHN 1717), 2 km west of Mirador, male, 4 December 1981, 146.3 g., light fat, moderate moult, skull partially ossified; (IHN 1718), male, 15 April 1982, 126.6 g., light fat, no moult, skull partially ossified.

BLACK-BELLIED PLOVER. **chorlo gris** *Pluvialis squatarola*

The only previous records for Oaxaca belong to the Pacific coast (Binford 1989); this record documents its presence in the Atlantic region: (IHN 1719), Arroyo Platanar, female, 26 May 1982, 181.5 g., moderate fat, no moult, skull ossified, ovary enlarged.

COLLARED PLOVER. **chorlo de collar** *Charadrius collaris*

The species was recorded by Binford (1989) as an uncommon permanent resident in the Pacific region and to be expected on river bars of the Atlantic region. The specimens included herein document its presence in this region: (IHN 1720), Embarcadero Cooperativas, unsexed, 1 July 1980, 27.9 g., no fat, no moult, skull ossified; (IHN 1721), Embarcadero, female, 28 July 1980, 30 g., moderate fat, no moult, skull ossified; (IHN 1722), Pochotas, female, 14 April 1982, 32.4 g., light fat, no moult, skull ossified, ovary enlarged; (IHN 1723), male, 14 April 1982, 31 g., no fat, no moult, skull ossified, testes slightly enlarged.

BLACK-NECKED STILT. **candelero americano** *Himantopus mexicanus*

Cited by Binford (1989) as a common permanent resident in the Pacific region; Erickson & Hamilton (1993) reported a nesting adult on June 30 near La Venta, east of Juchitán, Oaxaca. Specimens in this paper extend its distributional range towards the Atlantic region: (IHN 1726), male, 11 September 1980, 170 g., moderate fat, skull partially ossified; (IHN 1727), female, 14 April 1982, 168.9 g., light fat, skull ossified; (IHN 1728), female, 5 December 1981, 153 g., moderate fat, heavy moult, skull ossified; (IHN 1730), female, 5 December 1981, 145.4 g., no fat, light moult, skull partially ossified.

LESSER YELLOWLEGS. **patamarilla menor** *Tringa flavipes*

Binford knew of records of this species only from the Pacific region, but predicted that it would be found elsewhere. Loetscher (1955) reported it from Playa Vicente, Veracruz (85 km southeast from Temascal). Specimens listed herein are the first records for the Atlantic region in Oaxaca: (IHN 1737), female, 15 April 1982, 99.9 g., moderate fat, light moult, skull ossified; (IHN 1738), Pescaditos de Arriba, 15 April 1982, female, 105.5 g., heavy fat, no moult, skull ossified.

LONG-BILLED DOWITCHER. **costurero pico largo** *Limnodromus scolopaceus*

Although known from Mirador, Veracruz, located 150 km north-northeast from Temascal (Loetscher 1955), these specimens are the first records for the Atlantic region in Oaxaca: (IHN 1752), Arroyo

Grande, undated female, 133.5 g., heavy fat, skull ossified; (IHN 1753), Arroyo Grande, female, 21 May 1981, 140.2 g., heavy fat, no moult, skull not ossified.

HERRING GULL. **gaviota plateada** *Larus argentatus*

The Herring Gull is a fairly common to common winter visitor on the Atlantic coast in Tamaulipas and northern Veracruz but northern Oaxaca has not been considered in its distributional range (Howell & Webb 1995). Loetscher (1955) considered it as uncommon to rare inland and referred to an inland recovery from Coscomatepec (120 km northwest from Temascal). Not included by Binford (1989) for Oaxaca. Thus, these records are the first for Oaxaca: (IHN 1773), "Pescadito de Arriba", 15 January 1981, 929 g., skull ossified, sex unrecorded, light fat, no moult; (IHN 1774), "Isla Bolso", 18 January 1983, unsexed, 966 g., skull ossified, heavy fat, moult unrecorded. (IHN 1755), locality and date as above, immature female, 1,009 g., skull ossified, heavy fat, light moult.

CASPIAN TERN. **charrán caspia** *Sterna caspia*

Specimens listed in this paper are the first specimens for the Atlantic region, all previous Oaxaca records being from the Pacific coast (Binford 1989): (IHN 1777), female, 13 April 1982, light fat, no moult, skull ossified. (IHN 1778), male, 22 May 1980, light fat, no moult, skull ossified.

ROYAL TERN. **charrán real** *S. maxima*

Ferrari-Pérez (1886) cited it as casual at Jalapa, Veracruz (155 km north from Temascal), and Andrle (1966) reported three birds from Catemaco (145 km east from Temascal). This is the first record for the Atlantic region in Oaxaca: (IHN 1779), female, 20 September 1980, 479.2 g., light fat, no moult, skull ossified.

STRIPED CUCKOO. **cuclillo rayado** *Tapera naevia*

Lowery & Dalquest (1951) reported a specimen in Veracruz, 75 km north from Temascal. Binford (1989), listed it as an uncommon permanent resident to at least a point 37 km south of San Juan Bautista Tuxtepec. This specimen reinforces its presence near San Miguel Soyaltepec, supporting the records of del Toro Avilés (Binford 1989): (IHN 1806), Centro Piscícola, male, 28 June 1980, 63.7 g., light fat, no moult, skull ossified, testes slightly enlarged.

STRIPED OWL. **búho caraclara** *Asio clamator*

A specimen from Presidio, Veracruz (18°39′N 96°46′), collected in 1925 is the nearest to Temascal. A rare permanent resident in Atlantic region, it was previously known only from three specimens collected in the Isthmus in 1960 (Binford 1989). The specimens reported here represent a major range extension to the northwest in Oaxaca: (IHN 1814), 1 km from Chicalí, male, 17 February 1981, 354.5 g., no fat, no moult, skull partially ossified; (IHN 1815), 1 km south of Chicalí, female, 17 March 1981, 463 g., light fat, light moult, skull ossified, ovary and ova enlarged. (IHN 1816), 1 km west of Chicalí, female, 21 May 1981, no fat, no moult, skull ossified; (IHN 1817), 1 km south of Chicalí, female, 26 May 1981, 413.7 g., no fat, heavy moult, skull ossified.

BUFF-BELLIED HUMMINGBIRD. colibrí yucateco *Amazilia yucatanensis*

Though known from Veracruz (50 km northeast of Temascal) according to Lowery & Dalquest (1951), the only previous definite Oaxaca record was a specimen taken in the Isthmus (Binford 1989): (IHN 1865), female, 23 March 1980, 2.5 g., no fat, no moult, skull partially ossified.

GREAT ANTSHRIKE. batará mayor *Taraba major*

These records verify its presence in the Atlantic region and could support those of del Toro Avilés, questioned by Binford (1989): (IHN 1895), 150 m., south Centro Acuícola, male, 24 March 1980, 64 g., no fat, no moult, skull ossified; (IHN 1896), 120 m., south of Estación Acuícola, female, 25 March 1980, 60 g., light fat, no moult, skull ossified, ovary enlarged.

SLATE-HEADED TODY-FLYCATCHER. espatulilla gris *Todirostrum sylvia*

The status of this species in the Atlantic region is similar to that of *Taraba major* (above): (IHN 1916), 150 m, south of Centro Acuícola, female, 27 June 1980, 6.7 g., no fat, no moult, skull partially ossified, ovary enlarged; (IHN 1917), 150 m, northeast of Centro Piscícola, female, 1 June 1980, 8 g., no fat, no moult, skull partially ossified; (IHN 1918), 150 m, north of Estación Piscícola, male, 1 June 1980, 8 g., light fat, no moult, skull partially ossified; (IHN 1919), male, 27 June 1980, 6.7 g., no fat, no moult, skull partially ossified, testes enlarged.

ROYAL FLYCATCHER. mosquero real *Onychorhynchus coronatus*

This record extends its distributional range 200 km NW, and like those above, supports the records of Mario del Toro Avilés (Binford 1989): (IHN 1921), Estación Piscícola, female, 15 February 1980, no fat, no moult, skull ossified.

COUCH'S KINGBIRD. tirano silbador *Tyrannus couchii*

This is the second definite record for the species in Oaxaca or the third if the specimen of Mario del Toro Avilés is accepted (Binford 1989): (IHN 1981), Centro Acuícola, male, 28 May 1980, light fat, no moult, skull ossified, testes enlarged.

BLUE-WINGED WARBLER. chipe ala azul *Vermivora pinus*

Apparently it is a rare winter resident and uncommon transient based on the available collecting dates. These are additional specimens for Oaxaca because Binford (1989) cited only three: (IHN 2061), 150 m, south of Centro Piscícola, unsexed, 20 September 1980, 7.2 g., no fat, no moult, skull partially ossified; (IHN 2062), 150 m, south of Centro Piscícola, unsexed, 29 September 1980, 7 g., no fat, no moult, skull partially ossified; (IHN 2063), 150 m, south of Centro Piscícola, unsexed, 3 April 1980, no fat, no moult, skull ossified; (IHN 2064), 150 m south of Centro Piscícola, female, 23 March 1980, 7.5 g., no fat, no moult, skull ossified, ovary slightly enlarged; (IHN 2065), 150 m west from Mesón, female, 20 November 1980, 6 g., no fat, no moult, skull ossified; (IHN 2066), 150 m, south of Centro Piscícola, unsexed, 20 September 1980, 6.4 g., no fat, no moult, skull ossified; (IHN 2067), 150 m south of Centro Piscícola, male, 13 September 1980, 7 g., no fat, no moult, skull ossified; (IHN 2068), 150 m, south of Centro Piscícola, male, 23 September 1980, 6.3 g., no fat, no moult, skull partially ossified.

GRAY-THROATED CHAT. **granatelo yucateco** *Granatellus sallaei*

This record reinforces its presence in the area and could support del Toro Avilés' records (Binford 1989) from San Miguel Soyaltepec: (IHN 2163), male, 29 May 1980, unweighed, no fat, no moult, skull ossified, testes slightly enlarged.

THICK-BILLED SEED-FINCH. **semillero pico grueso** *Oryzoborus funereus*

Binford (1989) only cited three records for the Atlantic region, one from Suchapam (locality unknown, but possibly near Playa Vicente, Veracruz; type of *funereus* and presumably in BMNH). One specimen (ARPC 5442) from 39 km north of Matías Romero and two specimens in the museum of Natural History of Leiden (907/35082 and 908/35083) and cited by Mees (1970). These specimens reinforce the presence of this species as a permanent resident and disprove its supposed rarity. All specimens except no 2,296 are from 150 m south of Estación Piscícola: (IHN 2296), Estación Piscícola, female, 16 February 1980, 10 g., no fat, no moult, skull partially ossified; (IHN 2297), male, 26 June 1980, 12.8 g., no fat, light moult, skull ossified, testes enlarged; (IHN 2298), male, 1 August 1990, unweighed, no fat, no moult, skull ossified, testes enlarged. (IHN 2299), male, 26 June 1980, 12 g., no fat, no moult, skull ossified, testes enlarged; (IHN 2300), female, 28 June 1980, 12.7 g., no fat, no moult, skull ossified, ovary slightly enlarged; (IHN 2301), male, 23 March 1980, 10 g., light fat, no moult, skull ossified; (IHN 2302), female, 27 June 1980, 12.1 g., no fat, light moult, skull ossified, ovary slightly enlarged.

HOODED ORIOLE. **bolsero encapuchado** *Icterus cucullatus*

These specimens reinforce its presence in the Atlantic region and could support the records of Mario del Toro Avilés (Binford 1989): (IHN 2330), Centro Acuícola, male, 23 May 1980, 70 g., no fat, no moult, skull ossified, testes enlarged; (IHN 2331), 150 m, south of Centro Piscícola, female, 20 September 1980, 58.1 g., no fat, light moult, skull partially ossified; (IHN 2332, 150 m, south of Centro Piscícola, male, 23 March 1980, 72 g., no fat, no moult, skull ossified, testes slightly enlarged. The May record suggests the possibility of breeding.

CHESTNUT-HEADED OROPENDOLA. **oropéndola cabeza castaña** *Psarocolius wagleri*

The specimen in the collection (IHN 2359), was a female collected at 50 m northeast Centro Acuícola on 28 June 1980, 113.8 g., skull ossified, no fat, no moult. Although Chestnut-headed Oropendola is reported from northern Oaxaca (Torres-Chávez 1992, Howell & Webb 1995) on the basis of sight records by Behrstock & Howell, the specimen reported herein appears to be the first for Oaxaca.The specimens cited above provide more information for Oaxaca's avifauna (Friedmann *et al.* 1950, Miller *et al.* 1957, AOU 1983, Binford 1989, Parkes 1990, Howell & Webb 1995) and they were not known to Binford (1989) nor Parkes (1990), as is true of many specimens deposited in Mexican ornithological collections. Clearly, much remains to be discovered to increase knowledge of the birds of this state. In this task, Mexican museums can provide additional information to fill major gaps in the knowledge of Mexican ornithology.

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Notes on birds from the Cape Verde Islands in the collection of the Centro de Zoologia, Lisbon, with comments on taxonomy and distribution

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A comprehensive overview of all taxa of birds reliably recorded in the Cape Verde Islands, with details on inter- and intra-island distribution, breeding, migration and taxonomy (including data up to 1994), was presented by Hazevoet (1995). In preparation for that work, the major collections of Cape Verde birds in the U.K. and U.S.A. were studied but, so far, there had been no opportunity to study the Cape Verde collection at the Centro de Zoologia of the Instituto de Investigação Científica Tropical (I.I.C.T.) in Lisbon. Specimens in this collection were listed by Frade (1976) and data in Hazevoet (1995) were taken from that paper. This included several 'first records', as well as data on rare migrants and endemics. Frade (1976) listed specimens by island but did not give within-island collecting localities. Moreover, some parts of his paper were not entirely clear or warranted further confirmation of the specific identity of some specimens.

During a visit to the Centro de Zoologia in June 1997, I had the opportunity to study the collection of birds from the Cape Verde Islands. Most of these (*c.* 400 specimens) were collected by Sr. Jaime Vieira dos Santos during three autumn visits in 1969, 1970, and 1972. Collections were made throughout the archipelago, except for the islands of Santa Luzia, Sal, and Boavista. In addition, there are *c.* 25 specimens collected on various islands by Father René de Naurois in 1965 and 1968. Some of the latter, but not all, were included by Frade (1976). In most cases, within-island collecting localities were given on the specimen labels (as well as in the collection catalogue) and it has now been possible to establish these as well as to verify the identity of the rarer taxa, some of which proved to have been misidentified by Frade (1976).

Notes on selected taxa

Unless stated otherwise, general data on distribution, population size, breeding, number of records, etc. in the following are taken from

Hazevoet (1995) and supplements to that work (Hazevoet *et al.* 1996, Hazevoet 1997). Abbreviations: AMNH—American Museum of Natural History, New York; BMNH—The Natural History Museum, Tring; CZL—Centro de Zoologia, Instituto de Investigação Científica Tropical, Lisbon; MNHN—Muséum National d'Histoire Naturelle, Paris; YPM—Peabody Museum of Natural History, Yale University, New Haven, Conn.; ZMA—Zoölogisch Museum, University of Amsterdam.

CAPE VERDE PETREL *Pterodroma feae*

A female taken at the nest at Rui Vaz (altitude *c.* 600 m), Santiago, 15 February 1968 (CZL 68 001), was not listed by Frade (1976). A male, taken at the same locality and date, is in the BMNH. These are the only known specimen records from Santiago, where it has been found breeding in the central mountain range (Serra do Pico da Antónia) during the 1960s. If it still occurs there, numbers are apparently small as there have been no reports from Santiago since. Elsewhere in the Cape Verde Islands, breeding of this rare and endangered taxon has been documented for the islands of Fogo, Santo Antão, and São Nicolau. Although difficult to establish, the total population is estimated to range between 500 and 1000 pairs.

The CZL specimen lacks a breast band, the absence of which has often been taken as a good field mark of *P. feae* [sensu lato, i.e. *feae* (Cape Verdes) and *deserta* (Bugio islet, off Madeira)], distinguishing it from *P. mollis* of the southern oceans (e.g. Enticott 1991, Gantlett 1995). However, a male *P. feae* in YPM, collected at the breeding grounds on São Nicolau, has a virtually complete grey breast band. On the other hand, the breast band in *P. mollis* may be rather incomplete in some individuals (Clancey *et al.* 1981, Zonfrillo 1994) and field identification of *P. feae*, solely based on the absence or presence of a breast band, must be considered unreliable.

Mathews (1934) separated *deserta* from *feae* on account of differences in the means of various morphometrics, without specifying the number of specimens measured or designating a type specimen. Measurements of the CZL specimen (wing 269 mm, tarsus 33 mm, bill 30 mm, maximum bill height 13.5 mm) are within the ranges of both the Cape Verde and Bugio populations (*cf.* Bourne 1957, Jouanin *et al.* 1969, Cramp & Simmons 1977, Zino & Zino 1986). No qualitative morphological characters, diagnostic of either *feae* or *deserta*, have been described and the Cape Verde and Bugio populations have traditionally been treated as conspecific (e.g. Cramp & Simmons 1977, Jouanin & Mougin 1979, Bourne 1983). However, divergence in molecular or behavioural characters (e.g. display vocalizations) has not been investigated so far. Gadfly petrels are highly philopatric, but share similar life styles away from the breeding grounds, and taxon specific genetic and reproductive characters are likely to develop before differences in external morphology. Until these lines of evidence have been investigated, 'lumping' of *feae* and *deserta* into a single 'polytypic species' is premature and unwarranted. Such data may also shed further light on the phylogeny of the monophyletic group of North

Atlantic gadfly petrels (*madeira*, *feae*, *deserta*, *cahow*, *hasitata*, and probably also—presumably extinct—*caribbaea*). Contrary to the suggestion contained in traditional classification, this clade is not closely related to *P. mollis*, with which it does not even share a sister-group relationship (*cf.* Hazevoet 1997).

CAPE VERDE SHEARWATER *Calonectris edwardsii*

Hazevoet (1995) listed the island of Santo Antão among the taxon's breeding localities, based on 'four juveniles' collected there in November 1968, and referring to Frade (1976) as the source of this information. However, Frade (1976) in fact only listed two males and two females (without commenting on age) collected on Santo Antão in November 1972. The specimens (CZL 72 039, 041, 043, 048) are in fact of adults collected offshore and, therefore, do not provide an indication of breeding on Santo Antão. Although 'cagarras' were locally reported to breed on the island in 1988–1990, this may refer to Cape Verde Little Shearwater *Puffinus boydi* (a breeding bird of Santo Antão), which fishermen sometimes refer to by the same name. At present, there is no other indication of breeding of *C. edwardsii* on Santo Antão. Main breeding sites are found on the island of Brava and the islets of Raso and Branco, with smaller colonies on some of the other islands, and a total population estimated at *c.* 10,000 pairs at most. This endemic species suffers great losses from local fishermen, who take thousands of young each year.

RED-BILLED TROPICBIRD *Phaethon aethereus*

Three specimens (CZL 69 248–250) collected on Brava, 23 October 1969, were taken at Ponta do Incenso, along the northeastern coast of the island. The only recent information of breeding on Brava was of a colony near Porto dos Ferreiros, along the southwestern coast, during the 1980s. In view of the specimens collected at Ponta do Incenso in 1969, breeding may still occur along the northern coast as well. The population of *P. aethereus* in the Cape Verdes is under heavy pressure from human depredation and the number of colonies, as well as the number of pairs within colonies, have decreased dramatically over the past century and only 100–125 pairs remain today. Outside the Cape Verdes, the only breeding site along the Atlantic coasts of Africa is at the Iles de la Madeleine, off Dakar, Senegal (Brown *et al.* 1982, Morel & Morel 1990).

LITTLE BITTERN *Ixobrychus minutus*

An unsexed juvenile (CZL 69 230), collected at Vila Nova Sintra, Brave, 17 October 1969, constitutes the only record for the Cape Verde Islands. It was assigned to Afrotropical 'subspecies' *payesii* by Frade (1976), who did not give reasons for this taxonomic allocation. Examination of the specimen did not reveal any characteristics that would justify Frade's decision. In plumage as well as in measurements the bird is indistinguishable from nominate *minutus*. Wing (150 mm) and tarsus (45.5 mm) measurements are within the ranges of both male and female *minutus* (*cf.* Cramp & Simmons 1977, Brown *et al.* 1982;

specimens in ZMA). Its somewhat short bill (44.5 mm) is within the range of females but may also be due to the bird being a juvenile. The blackish feathers on the sides of the breast may be indicative of a male. Cramp & Simmons (1977) stated that p10 is distinctly shorter than p9 in *payesii*, but this is not the case in the specimen concerned. According to Chapin (1932), the distance from the tip of the innermost primary to the end of the longest primary is 46–47 mm in *minutus*, but only 29–34 mm in *payesii*. The difference in length between p10 and p1 in five juvenile *minutus* in ZMA shows no difference with that of the Cape Verde specimen, in which it measures 46 mm. It is therefore concluded that the bird from Brava concerns a northern migrant of 'subspecies' *minutus*. Little Bittern is believed to be a widespread winter visitor in West Africa but, due to its skulking habits, its distribution is poorly known. In Senegal, however, the large majority of birds examined in the hand showed to be northern *minutus* rather than Afrotropical *payesii* (Morel & Morel 1990, Rodwell *et al.* 1996).

INTERMEDIATE EGRET *Egretta intermedia*

Frade (1976) listed four specimens collected on Santo Antão in October–November 1972. These birds (CZL 72 023, 025, 049, 056), taken at different localities on the island, are in fact Little Egrets *E. garzetta* (a widespread Cape Verde resident), correctly labelled and catalogued as such in the collection. A specimen taken at the Pedra Badejo lagoons, Santiago, 11 January 1965 (CZL 65 032), also listed by Frade (1976), is indeed *E. intermedia*. Intermediate Egret is a rare Afrotropical migrant visitor to the Cape Verde Islands. Up to 1996, there are now four records (involving eight or nine birds) from the islands of Santiago (2), Sal (1), and Boavista (1), all at lagoons and saltpans.

CAPE VERDE PURPLE HERON *Ardea bournei*

Frade (1976) listed seven specimens taken in September 1969. One of these, although listed in the CZL catalogue, could not be found in the collection. An adult male (CZL 69 091) and the missing female ('69' of Frade but catalogued as CZL 69 090) were collected at the Boa Entrada colony, while another male (CZL 69 144) was taken at the Pedra Badejo lagoons. Interestingly, one male, one female, and two unsexed birds (CZL 69 132–135), were collected at the São Domingos colony. These constitute the last documented records from this former and largest known breeding site, which, according to local informants, disappeared in the early 1970s when the nest-trees were felled. Today, only two breeding sites are known to remain (each situated in a single tree), at Boa Entrada (Santa Catarina region) and at Banana (Ribeira Montanha). The total population of this highly endangered Santiago endemic does not exceed *c.* 20 pairs.

CAPE VERDE KITE *Milvus fasciicauda*

Frade (1976) listed two specimens from the island of Santo Antão as well as two from São Nicolau. However, in the collection only one female (CZL 72 028) from Santo Antão, collected 28 October 1972, could be found, while there are two females and one male (CZL 68 004, 70 040, 70 056) from São Nicolau, collected 25 March 1968, 21 October 1970, and 2 November 1970, respectively. The Cape Verde Kite is probably extinct on São Nicolau, there being no records since those from 1968–1970 listed above. Nowadays, Santo Antão is the only remaining refuge of this endemic taxon, but numbers are dwindling on that island too. No direct persecution seems to take place, but this scavenger takes poisoned bait laid in attempts to control feral dogs (Hazevoet 1997). If this practice does not stop soon, this endemic raptor may become extinct.

COMMON KESTREL *Falco tinnunculus*

A juvenile male (CZL 72 004), collected at Porto Novo, Santo Antão, 20 October 1972, has a wing length (231 mm) far exceeding that of local *F. neglectus*, the latter being endemic to the northwestern island group (Santo Antão, São Vicente, Santa Luzia, Branco, Raso, São Nicolau). Wing measurements of male *F. neglectus* are distinctly smaller, viz. 190–212 mm (n=16; specimens in AMNH, CZL, YPM), while the upperparts, underparts and wing in *neglectus* are very heavily barred and streaked on a pale ground in both sexes. The Santo Antão specimen differs from *F. alexandri* (the other kestrel of the Cape Verdes, endemic to the eastern and southern islands of Sal, Boavista, Maio, Santiago, Fogo, and Brava, but not known from the northwestern islands) in its longer wing and its less heavily barred and streaked upperparts and tail (wing length of 23 male *alexandri* ranged 210–226 mm; specimens in AMNH, CZL, YPM). In plumage characters and measurements, the specimen from Santo Antão is indistinguishable from first year *F. tinnunculus* of European populations (specimens in ZMA). Previously, there was only one record of *F. tinnunculus* for the Cape Verde Islands, viz. an immature male collected on Sal, 10 March 1924 (AMNH).

De Naurois (1987) listed a male kestrel (with wing length of 231 mm) collected at Porto Novo, Santo Antão. He mentioned that this was "collecté par moi-même", but did not give details on collecting date or the collection where the specimen is kept. The CZL specimen from Santo Antão discussed above was doubtless collected by Sr. Jaime Vieira dos Santos. It seems likely that de Naurois handled the same specimen (he has been a regular visitor to the Centro de Zoologia) and that his statement about the collector's identity is erroneous. There is no kestrel from Santo Antão resembling the one reported by de Naurois (1987) in MNHN, where the majority of de Naurois' specimens are kept (E. Pasquet *in litt.*).

CAPE VERDE CANE WARBLER *Acrocephalus brevipennis*

Frade (1976) listed three specimens, viz. two from Santiago (CZL 69 097, 117) and one from Brava (CZL 69 243). The latter, collected at Braga (in the north of the island), 21 October 1969, constitutes the last documented report for the island of Brava. A fourth (male) specimen in the collection (CZL 70 008), taken at Ribeira da Queimada, São Nicolau, 21 October 1970, was not mentioned by Frade (1976).

Previously, there were no records from São Nicolau after 1924. Surveys in the years 1963–1968 (R. de Naurois *in litt.*) and 1986–1996 (CJH) did not locate any and the taxon was presumed extinct on São Nicolau, the type locality of *A. brevipennis* (*cf.* Hazevoet 1993). However, it was present on São Nicolau in 1970 and small numbers were found there in 1998 (Hazevoet 1999). Further surveys should be carried out to establish whether it survives on Brava. Historically, the Cape Verde Cane Warbler is only known from the islands of São Nicolau, Brava, and Santiago. The total population on Santiago is estimated not to exceed *c.* 500 pairs.

SPANISH SPARROW *Passer hispaniolensis*

Hazevoet (1995) stated that there were no records from the island of São Nicolau between 1897 and 1982. This is obviously due to a mistake because Frade (1976) mentioned three specimens (CZL 70 010, 051, 052), collected on São Nicolau in October 1970. In addition, there is a fourth specimen (CZL 70 001) from the same island and date, not listed by Frade (1976). The single specimen record (CZL 72 046), constituting the only firm evidence of Spanish Sparrow's occurrence on the island of Santo Antão, was taken at Ponta do Sol (in the extreme northwest of the island), 5 November 1972. Frade (1976) listed three specimens collected on the islet of Branco. The species had not been recorded from Branco on any previous occasion and Hazevoet (1995) suggested that Frade's (1976) listing was perhaps in error for *P. iagoensis* (see below). However, there are in fact five specimens of *P. hispaniolensis* (CZL 70 108, 109, 109B, 110, 111A), labelled and catalogued as being collected on Branco, 8 November 1970. This indicates that stray birds sometimes visit this uninhabited and rocky islet. Although common and widespread in the eastern and southern islands of Boavista, Maio, Santiago, Fogo, and Brava, its occurrence elsewhere in the archipelago appears to be rather irregular and is probably subject to nomadic movements, presumably in connection with erratic local rainfall.

IAGO SPARROW *Passer iagoensis*

There are two specimens (CZL 70 110, 111), collected on the islet of Branco, 8 November 1970, not listed by Frade (1976). Apparently, some double numbering has taken place (see *P. hispaniolensis* above) and this may have been the cause of Frade's (1976) ommision. There are only a few records of *P. iagoensis* from Branco, although this endemic taxon is common on the nearby islet of Raso as well as on all other islands except Fogo.

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Note on the osteology and taxonomic position of African Long-tailed Hawk *Urotriorchis macrourus* (Aves: Accipitridae)

by Jiří Mlíkovský

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The African Long-tailed Hawk *Urotriorchis macrourus* inhabits tropical rain forests of Central Africa (Grossman & Hamlet 1964, Brown & Amadon 1968, Brown *et al*. 1982, del Hoyo *et al*. 1994). The species was first described by Hartlaub (1855: 353) in the genus *Astur* Lacépède, 1799 [*Accipiter* Brisson, 1760]. Cassin (1859: 33) transferred it to *Micrastur* Gray, 1841, but the latter genus was later shown to belong in the Falconidae (Ridgway 1874, 1875, Jollie 1977b). Later, Sharpe (1874: 83) created for *macrourus* the monotypic genus *Urotriorchis*. All subsequent authors considered *macrourus* to be an aberrant *Accipiter*, either including it in this genus, or listing it next to it. Del Hoyo *et al*. (1994: 164) summarized current opinions on the taxonomic position of *Urotriorchis* as follows: "Monotypic genus, apparently very close to *Accipiter*, with which it has been merged; has also been linked with other endemic African genera, *Melierax* and *Kaupifalco*."

Almost all of these taxonomic assignments were based on the external morphology of the bird. Jollie (1976: 162) listed *Urotriorchis macrourus* among the species he examined osteologically, but both comments on *Urotriorchis* in his 342 pages long paper concerned feathers, which casts some doubts on his statement. Hence, the only comments on the osteology of *Urotriorchis macrourus* are those of Olson (1982, 1987), which concern the presence of the procoracoid foramen, and the absence of fused phalanges of the inner toe, respectively, in this species. Olson (1987) was the first to indicate that *Urotriorchis macrourus* might not be closely related to *Accipiter*.

While identifying unusual ungual phalanges of accipitrid birds from the early Miocene locality Tuchořice in the Czech Republic (see Mlíkovský in press), I observed that their aberrant structure is unique, within the Accipitridae, to a group of large, tropical eagles, particularly *Polemaetus* and *Spizaetus*, plus *Urotriorchis* (see below for details), which provided further support for Olson's (1987) conjecture, that *Urotriorchis* is not related to *Accipiter*. My reinvestigation of a skeleton of *Urotriorchis macrourus*, described below, showed that this species is indeed not related to *Accipiter*, and belongs in the *Polemaetus* group of eagles.

Material examined

I examined skeletons of raptors in the collections of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Additional specimens were examined in my collection in Praha, Czech Republic. Ungual phalanges were examined in all the taxa listed below. Complete skeletons were used for comparisons in the taxa marked with an asterisk.

The following taxa of the Accipitridae were found to possess the unique structure of ungual phalanges: *Lophaetus occipitalis*, **Spizaetus ornatus*, **S. tyrannus*, **S. limnaeetus*, *Stephanoaetus coronatus*, **Polemaetus bellicosus*, and **Urotriorchis macrourus*. The examined specimen of *Urotriorchis macrourus* was a male (USNM 292398), collected by J. A. Reis on 6 August 1928 near Efulan in Cameroon.

The following taxa of the Accipitridae do *not* possess the unique structure of ungual phalanges: *Aviceda subcristata*, *Leptodon cayanensis*, *Chondrohierax uncinatus*, *Pernis apivorus*, *Elanoides forficatus*, *Machaeramphus alcinus*, *Gampsonyx swainsonii*, *Elanus caeruleus*, *Chelictinia ridcourii*, *Rosthramus sociabilis*, *Harpagus bidentatus*, *Ictinia plumbea*, *Milvus migrans*, *Haliastur indus*, *Haliaeetus leucocephalus*, *Ichthyophaga humilis*, *Gypohierax angolensis*, *Gypaetus barbatus*, *Neophron percnopterus*, *Necrosyrtes monachus*, *Torgos tracheliotus*, *Trigonoceps occipitalis*, *Gyps fulvus*, *Aegypius monachus*, *Circaetus gallicus*, *Terathiopius ecaudatus*, *Spilornis holospilus*, *Polyboroides typus*, *Circus aeruginosus*, **Melierax canorus*, **Accipiter gentilis*, **A. griseogularis*, *A. nisus*, *Butastur indicus*, **Kaupifalco monogrammicus*, *Heterospizias meridionalis*, *Geranospiza caerulescens*, *Leucopternis albicollis*, *Buteogallus anthracinus*, *Parabuteo unicinctus*, *Busarellus nigricollis*, *Geranoaetus melanoleucus*, *Buteo jamaicensis*, *B. buteo*, *Harpia harpyja*, *Aquila chrysaetos*, *Hieraeetus fasciatus*, and *Spizastur melanoleucus*. The unique condition of ungual phalanges was also not found in the Sagittariidae (*Sagittarius serpentarius*), Pandionidae (*Pandion haliaeetus*), nor Falconidae (*Herpetotheres cachinnans*, *Micrastur semitorquatus*, *Falco tinnunculus*).

Osteology

Urotriorchis differs from *Accipiter* in a number of osteological characters, and agrees in them with the *Polemaetus* group of eagles. The **coracoid** of *Urotriorchis* differs from the same element of *Accipiter* in having a coracoidal fenestra present (see also Olson 1987). In this character *Urotriorchis* agrees with most Accipitridae, including *Polemaetus*, *Spizaetus*, *Kaupifalco* and *Melierax*. The **scapula** of *Urotriorchis* differs from the same element of *Accipiter* in having the pneumatic foramen on the dorsal side of the neck (in *Accipiter* this foramen is on the ventral side). The **furcula** of *Urotriorchis* is markedly narrow, while the same element of *Accipiter*, *Kaupifalco*, *Melierax*, *Spizaetus* and *Polemaetus* is broad. On the **sternum**, the ventral manubrial spine is short and blunt in *Urotriorchis*, *Spizaetus* and *Polemaetus*, while it is long and projecting in *Accipiter*, *Kaupifalco* and *Melierax*. Sternal fenestra are large in all species except *Polemaetus*, in which they are reduced. The posterior border of the sternal plate is approximately straight in *Accipiter*, *Melierax* and *Kaupifalco*, while it is concave in *Urotriochis*, *Polemaetus* and *Spizaetus*. Carina is well

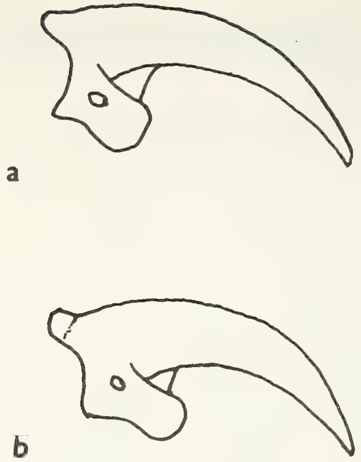

Figure 1. Schematic drawings of ungual phalanges of *Aquila chrysaetos* (a) and *Polemaetus bellicosus* (b), showing generalized and derived condition of the dorsal end of articular surface, respectively.

developed in *Accipiter*, *Kaupifalco* and *Melierax*, while it is reduced in *Urotriorchis*, *Polemaetus* and *Spizaetus*. The relation of maximal height of carina (A) to maximum length of sternum without manubrial spine (B) is 43.1–46.7% in the former group, and 35.7–40.5% in the latter group. Exact data are 43.1 in *Accipiter gentilis* (A/B=34.5/80), 43.8 in *Accipiter griseogularis* (16/36.5), 46.7 in *Kaupifalco monogrammicus* (17.5/37.5), 43.3 in *Melierax metabates* (26/60), 40.5 in *Polemaetus bellicosus* (45/111), 38.3 in *Spizaetus ornatus* (24.5/64), 37.2 in *Spizaetus limnaeetus* (29/78), 35.7 in *Spizaetus tyrannus* (23/64.5), and 38.4 in *Urotriorchis macrourus* (21.5/56) (n=1 in each case; the measured specimen of *Accipiter gentilis* was a female, all others were males). The **ulna** has the impression of *brachialis anticus* distinct and distally bordered in *Accipiter* and *Kaupifalco*. This impression is indistinct and distally not bordered in *Urotriorchis*, *Polemaetus*, *Spizaetus* and *Melierax*. The **phalanx I digiti II** possesses a tendineal elevation on the external side of its metacarpal facet in *Accipiter* and (slightly) in *Kaupifalco*. This elevation is absent in *Urotriorchis*, *Polemaetus*, *Spizaetus* and *Melierax*. On the **tarsometatarsus**, the trochlea for digit II is medially bent in *Accipiter* and *Melierax*, while it is posteriomedially straight in *Urotriorchis*, *Polemaetus*, *Spizaetus* and *Kaupifalco*. **Ungual phalanges** are unique in *Urotriorchis*, *Polemaetus*, *Spizaetus*, *Spizastur* and *Lophaetus* in having a broad, well developed and elevated facet posterio-dorsally to the articular surface (Fig. 1). This facet is well separated from the dorsal surface of the claw by a transverse ridge. In *Stephanoaetus*, the facet is also developed, but is short. In *Polemaetus*, *Spizaetus* and *Urotriorchis*, the articular surface is distinctly heart-shaped (broad ventrally and narrow dorsally), and the heel is laterally flattened, so that its ventral border forms a sharp ridge. In *Lophaetus*, the articular surface is more rounded.

The bones not mentioned yielded no distinct characters, or the characters were found variable within the genera and, hence, unsuitable for any use in supraspecific classification.

Discussion

The discovery of two unique characters within the Accipitridae, viz. fused phalanges of the inner toe (see Olson 1987), and specifically developed facet on the ungual phalanx (this paper), indicates that large, non-vulturid accipitrids, which are generally called "eagles", form at least three groups, and may have evolved three times within the Accipitridae. I found the unique morphology of ungual phalanges described above in the genera *Spizastur*, *Lophaetus*, *Spizaetus*, *Stephanoaetus*, *Polemaetus* and *Urotriorchis*. The former five genera of large tropical eagles are usually considered closely related (Brown & Amadon 1968, Jollie 1977b, Amadon & Stresemann 1979, Kemp & Crowe 1990, Sibley & Monroe 1990, Holdaway 1994), and this new character supports their close relationship. *Urotriorchis* was usually considered closely related to *Accipiter*, *Melierax* and *Kaupifalco* (Amadon 1978, del Hoyo *et al.* 1994), or even included in *Accipiter* (Wolters 1977–1982). Additional osteological characters mentioned above confirm that *Urotriorchis* should be transferred from the Accipitrinae (sensu Jollie 1977b) to the *Polemaetus* group of eagles. On the other hand, *Melierax* and particularly *Kaupifalco* are osteologically close to *Accipiter*, although *Accipiter* is unique in having no procoracoid foramen (see Olson 1982).

The fossil record of the *Polemaetus* group of eagles goes back to the early Miocene of Europe, where *Polemaetus* sp. was found in St.-Gérand-le-Puy (MN 2 sensu Mein 1990) in France and in Tuchořice (MN 3) in the Czech Republic (Mlíkovský in press). Here, *Polemaetus* is a welcome addition to the tropical avifauna, which inhabited Europe in that time (Mlíkovský 1996). The next oldest record is *Spizaetus schultzi* Martin, 1975 from the late Miocene (Hemphillian s. str.) of Cambridge in Nebraska (see Becker 1987 for the age of this locality). All other records are limited to the Pleistocene of North America and Mexico, from which several fossil species have been described. They include *Spizaetus pliogryps* (Shufeldt, 1892) from Oregon, *Spizaetus grinnelli* (Miller, 1911) from California, *Spizaetus willetti* Howard, 1935 from Nevada, *Spizaetus tanneri* Martin, 1971 from Nebraska, and *Neogyps errans* Miller, 1916 from California. The last species, which is based on a tarsometatarsus from the late Pleistocene of Rancho La Brea, was originally thought to represent a New World vulture (Miller 1916), and later allied with *Gypaeetus* (Brodkorb 1964), but Jollie (1977a, b) showed that it belongs in the *Polemaetus* group of eagles, without discussing its generic status. Taxonomic identity of all of the Pleistocene species needs confirmation, however, because such a diversity of tropical (!) eagles in Pleistocene North America seems improbable.

Three eagle genera—*Haliaeetus*, *Ichthyophaga* and *Busarellus*—do not share the unique morphology of ungual phalanges with the eagles from the *Polemaetus* group. Unlike the *Polemaetus* group, these three genera have fused phalanges of the inner toe, a unique character which allies them with kites of the genera *Haliastur*, *Milvus* and *Ictinia* (Olson 1982).

Of the remaining eagle genera, *Aquila*, *Hieraeetus*, *Harpia*, *Terathopius*, *Spilornis* and *Geranoaetus* possess neither of these unique characters. *Pithecophaga* and *Harpyopsis* do not possess fused phalanges of the inner toe (Olson 1982, Boles and Lowe 1985), but their ungual phalanges remain undescribed. Not available for study were the eagle genera *Dryotriorchis*, *Eutriorchis*, *Harphyaliaetus* and *Oroaetus*. American Quaternary eagles of the genera *Titanohierax* Wetmore, 1937 and *Amplibuteo* Campbell, 1979 do not appear to belong to any one of the two well defined eagle groups (see Olson & Hilgartner 1982), as does *Harpagornis* from the Quaternary of New Zealand (Holdaway 1991).

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Range extensions and notes on the status of little-known species from Venezuela

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No comprehensive review of the Venezuelan avifauna has been published since Meyer de Schauensee & Phelps (1978). Since then much ornithological research has been conducted and Venezuela has become a popular destination amongst North American and West European birdwatchers. Here, interesting range extensions, new state records and other significant observations are presented for 34 species. A total of 10 major range extensions are reported: Crested Eagle *Morphus guianensis* (Península de Paria, Sucre), Ruddy Turnstone *Arenaria interpres* (Llanos, Apure), Stilt Sandpiper *Calidris himantopus* (Llanos, Apure), Military Macaw *Ara militaris* (San Fernando de Apure, Barinas/Guárico), Spot-tailed Nightjar *Caprimulgus maculicaudus* (Río Caura, Bolívar), Chapman's Swift *C. chapmani* (Río Caura, Bolívar), Lesser Swallow-tailed Swift (*Panyptila cayennensis* (Interior Cordillera, Miranda), Black-chested Tyrant *Taeniotriccus andrei* (Monagas), Ringed Antpipit *Corythopis torquata* (Monagas) and Canada Warbler *Wilsonia canadensis* (Península de Paria, Sucre). New state records (where these represent important geographical extensions) and lesser range extensions are presented for 19 other species. In addition, attention is drawn to the Mucubají Pass, at the head of the Santo Domingo Valley, Mérida as an important flyway for migrant hirundines.

Initials in parentheses refer to the authors and their field companions, detailed in the Acknowledgements.

SLATE-COLOURED HAWK *Leucopternis schistacea*

One seen well at close quarters, both perched and in flight, on the edge of gallery forest in savanna at the Río Tiquire, north-west Bolívar on 17 March 1995 (NB, CGB, JH, GMK) represents a considerable eastward range extension from western Amazonas on the Orinoco (Meyer de Schauensee & Phelps 1978). The solid slate-grey plumage, including the entire underparts, short deep-based bill with red cere, red legs and single white median tail bar were clearly noted.

CRESTED EAGLE *Morphus guianensis*

In Venezuela, known only from the north-west Zulia and Aragua (Meyer de Schauensee & Phelps 1978). The authors' attention has been drawn to a pair of wings of this species, collected at the village of Los Mangos (400 m) on the Península de Paria, Sucre by Francisco Bisbal of the Museum of the Rancho Grande Biological Station at Maracay, where they are now held. This represents a substantial easterly range extension within Venezuela and the first record for Sucre (Sharpe 1997).

BLACK-AND-WHITE HAWK-EAGLE *Spizastur melanoleucus*

Singles at km 17 south of El Dorado, Bolívar on 23 January 1993 (DB, JC, RtE, GMK), Caño Colorado, Monagas on 12 March 1995 (NB, CGB, JH, GMK) and at the Palmichal Zone for Protection of Public Works (1,030 m), Carabobo on 27 August 1995 (DA, CJS). Known in Venezuela from Mérida, Aragua, Miranda, Distrito Federal, south-east Bolívar and Amazonas (Lentino *et al.* 1984); the above records confirm its occurrence in Carabobo, eastern Monagas and farther north in Bolívar than previously recorded. It is regularly recorded at Colonia Tovar, Aragua and in the Macarao National Park, Distrito Federal.

ORNATE HAWK-EAGLE *Spizaetus ornatus*

Three birds on Loma Los Naranjitos, El Avila (1,575 m) during January and February 1996 represent the first record for Distrito Federal (Fernández Yepez 1953, Meyer de Schauensee & Phelps 1978). At least one was also regularly seen or heard in the same location throughout 1997, particularly during the early part of the year (CJS).

BLACK HAWK-EAGLE *Spizaetus tyrannus*

There are no previously published records for the Central Coastal Cordillera, which includes Carabobo, Aragua, Miranda and the Distrito Federal (Meyer de Schauensee & Phelps 1978), although it is listed on two recent checklists (Lentino & Goodwin 1991, Lentino *et al.* 1993). Nevertheless, it can be regularly observed at several locations throughout this mountain range as follows: Palmichal Zone for Protection of Public Works (1,030 m), Carabobo State; Rancho Grande Biological Station, Choroní Road and Colonia Tovar, Aragua; Guatopo National Park, Miranda; and Macarao and El Avila National Parks, Distrito Federal (CJS). It can even be seen displaying over parts of Caracas (CJS), although it was not recorded here earlier this century (Fernández Yepez 1953). An interesting record is one displaying and mobbing two Ornate Hawk Eagles above Caracas at Loma Los Naranjitos, El Avila (1,575 m) on 31 May 1997 (CJS).

YELLOW-BREASTED CRAKE *Poliolimnas flaviventer*

There are no previous published records for Apure (Meyer de Schauensee & Phelps 1978), although it is listed as "rare" at Hato El Cedral private reserve (Ascanio & Rodríguez 1995). Eight at Hato El Cedral on 3 April 1996 (CJS, RCT), during extremely low water conditions, add to state records. It has probably been overlooked elsewhere in the llanos.

SUNGREBE *Heliornis fulica*

One on the Río Caura, from the bridge at Maripa, north-west Bolívar on 14 March 1995 (NB, CGB, JH, GMK). Previously recorded south of the Orinoco only in south-east Bolívar and Amazonas (Meyer de Schauensee & Phelps 1978), although there are unpublished records from the same area of the Río Caura in recent years (e.g. Jan Vermeulen *et al.* unpublished trip report).

UPLAND SANDPIPER *Bartramia longicauda*

One flew north, just east of Maripa, Bolívar on 14 March 1995 (NB, CGB, JH, GMK); the first published state record, although Boesman (1998) has also recorded the species in this area. Known only as a passage migrant in Venezuela, with published spring dates from the north-east of the country being 25 March–2 April (Friedmann & Smith 1955), and was considered common on passage in savanna areas in the same area in March, September and October, between 1944 and 1948 (Friedmann & Smith 1950). Previous published records are north of the Orinoco from Monagas west to Barinas and Mérida, and south of the Orinoco in Amazonas (Meyer de Schauensee & Phelps 1978). Zimmer & Hilty (1997) present four records from Junglaven, Amazonas in March and April in the early 1990s.

RUDDY TURNSTONE *Arenaria interpres*

Previously known only from coastal areas (Meyer de Schauensee & Phelps 1978), the first inland records were one at Hato El Frio, Apure on 16 March 1995 (CJS) and two at the same location on 24 November 1995 (EM, CJS).

STILT SANDPIPER *Calidris himantopus*

Previously recorded only on the coast (Meyer de Schauensee & Phelps 1978), this species is actually numerous inland (S. L. Hilty *in litt*. 1997). Three records in Apure are all c. 300 km inland; one at Hato El Frio on 27 January 1995 (CJS, KW), two at Hato El Frio on 16 March 1995 (CJS), one at Hato El Cedral on 1 January 1996 (CJS, RCT), 15 at Hato El Cedral on 3–4 March 1998 (CJS) and 38 at Hato El Cedral on 17 March 1998 (RCT, CJS). These records suggest that the species is regular in small numbers on inland waters.

MILITARY MACAW *Ara militaris*

Three, at close range, flew west at dusk in dry scrub north of San Fernando de Apure, Barinas/Guárico on 15 January 1993 (DJA, DB, JC, GMK) may have related to escapees. The identification was straightforward: large almost wholly green macaws with red foreheads and wing-bends, and the lower back, rump and most of tail, except reddish central feathers, being blue. This is apparently the southernmost record in Venezuela of this threatened species (Collar *et al*. 1994, Rodríguez & Rojas-Suárez 1995), with other recent records from Dpto. Girardot, Cojedes (Desenne & Strahl 1994). Although it is listed only for north-west Zulia and Distrito Federal by Meyer de Schauensee & Phelps (1978), currently known locations for Military Macaw are: the north slopes of Avila National Park, Distrito Federal, e.g. two above Camurí Grande on 3 January 1996 (CJS); Guatapo National Park, Miranda, where groups of 30–50 are easily seen along the higher part of the road (CJS); Cerro La Misión, Falcón, where it may nest in cavities in the limestone cliffs (CJS) and Sierra de Perijá. There are also recent records from the north slopes of Henri Pittier National Park (Fernández-Badillo *et al*. 1994).

SAFFRON-HEADED PARROT *Pionopsitta pyrilia*

Six at San Isidro Tunnel on 28 October 1995 at 1,500 m (CJS) is the first published record in Barinas. The species appears to be frequently seen at 900–1,500 m in the Santo Domingo Valley (David Ascanio pers. comm., S. L. Hilty *in litt.* 1997). The species is now thought to be threatened (Rodíguez & Rojas-Suárez 1995).

PAVONINE CUCKOO *Dromococcyx pavoninus*

One heard and seen well between Los Alpes and La Macanilla in Guatopo National Park, Miranda on 7 March 1992 (CJS) is the first state record; it has previously only been recorded in the Central Cordillera at Colonia Tovar, Aragua. A further Aragua record is of a bird tape-recorded by CJS at Rancho Grande Biological Station on 4 and 6 December 1997 (GR, CJS, DAS). Another new state record is a bird tape-recorded by CJS at La Capilla Verde (1,800 m), *c.* 15 km south-east of La Azulita on 22 January 1998 (CJS, DAS). The species is now known to be much more widely distributed (S. L. Hilty *in litt.* 1997) than indicated in Meyer de Schauensee & Phelps (1978), e.g. Boesman (1998) reports its presence in the lower Santo Domingo valley, north-west Barinas and along the Azulita road, Mérida.

TAWNY-BELLIED SCREECH-OWL *Otus watsonii*

At least one heard at Campamento Río Grande, Bolívar on 4 February 1993 (DB, JC, RtE, GMK). Previously known from Zulia and southern Táchira, extreme north-west Bolívar and central and southern Amazonas (Meyer de Schauensee & Phelps 1978) including the Cerro de la Neblina (Willard *et al.* 1991). Given its occurrence in Suriname (Parker *et al.* 1996), the species' presence in eastern Bolívar is unsurprising.

CRESTED OWL *Lophostrix cristata*

One heard along the entrance road to Campamento Río Grande, Bolívar on 4 February 1993 and three heard and one spotlighted in the same place on 6 February 1993 (DB, JC, RtE, GMK); at least one heard along the lower Río Caura near Maripa, Bolívar on 14 March 1995 and one heard along the entrance road to Campamento Río Grande, Bolívar on 17 March 1995 (NB, CGB, JH, GMK). Boesman (1998) also confirms its presence in the Caura forest. Meyer de Schauensee & Phelps (1978) speculated that the species might occur in southern Venezuela given its occurrence throughout the Guianas (Parker *et al.* 1996) and in parts of central Amazonian Brazil (Sick 1993), and Lentino *et al.* (1984) discovered two males (both taken from the Río Caura, Bolívar at 30 m) in the collection of the Estación Biológica de Rancho Grande (EBRG); one from Puerto Cabello and the other from Caño La Urbana; the only previous published record was a specimen taken at 100 m in northern Táchira.

BLACK-AND-WHITE OWL *Ciccaba nigrolineata*

Three calling (two seen) at the Palmichal Zone for Protection of Public Works (1,030 m), Carabobo on 12 January 1996 (MLG, HL, CJS). This is a westerly range extension of a species described as rare and local by Meyer de Schauensee & Phelps (1978). It can also regularly be heard during the early year at Rancho Grande, Aragua (1,000 m) (CJS).

BLACK-BANDED OWL *Ciccaba huhula*

At Campamento Río Grande, Bolívar: one heard on 4 February 1993 (DB, JC, RtE, GMK), the same bird spotlighted the following night, and one heard on 17 March 1995 (NB, CGB, JH, GMK). One heard at the lower Río Caura, just west of Maripa, Bolívar on 14 March 1995 (NB, CGB, JH, GMK), from where Boesman (1998) has also confirmed its occurrence. Meyer de Schauensee & Phelps (1978) list occurrences at El Cambur on the Lower Río Caura, Bolívar and at Cerro Guanarí and Caño Casiquiare, southern Amazonas.

ANDEAN POTOO *Nyctibius maculosus*

One at *c.* 2,300 m at Páramo de Tamá, Táchira on 13 January 1993 (DJA, DB, JC, GMK). Previously known in Venezuela only from the Boca de Monte in extreme east Táchira (Fjeldså & Krabbe 1990, Meyer de Schauensee & Phelps 1978).

LEAST NIGHTHAWK *Chordeiles pusillus*

At the lower Río Caura, south of Maripa, north-west Bolívar: two on 15 March 1995 and one on 16 March 1995 (NB, CGB, JH, GMK). Previously known south of the Orinoco, in Venezuela, only in eastern Bolívar from the Altiplanicie de Nuria south, and in north-western Amazonas. These new observations are located within a gap in the species' known range. In addition, it is worth noting that the species is common in the Gran Sabana, where it has been seen hawking over savanna in groups of up to 20 at San Ignacio de Yuraní, San Francisco de Yuraní, Liwo-Riwo and Kavanayen (955–1,050 m) (CJS).

SPOT-TAILED NIGHTJAR *Caprimulgus maculicaudus*

At the lower Río Caura, south of Maripa, north-west Bolívar: three on 14 March 1995, and at least one heard on both 15 March and 16 March 1995 (NB, CGB, JH, GMK). On the first date birds were spotlighted at close range, photographed and the song was tape-recorded. Previously recorded in Venezuela in south-west Barinas, Miranda and southern Amazonas along the Río Negro (Meyer de Schauensee & Phelps 1978).

CHAPMAN'S SWIFT *Chaetura chapmani*

One bird at the lower Río Caura, south of Maripa, north-west Bolívar on 15 March 1995 (NB, CGB, JH, GMK) appeared to be of this species: almost uniformly dark upperparts, with the exception of the paler rump and uppertail coverts, and very dark underparts exhibiting almost no contrast between the throat and breast. In Venezuela published records are from north-west Zulia, Aragua, Sucre and northern Amazonas (Chantler & Driessens 1995, Meyer de

Schauensee & Phelps 1978), although there are also unpublished records from eastern Bolívar (Gunnar Engblom pers. comm.).

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

Two at Turgua, Miranda on 4 February 1996 and two at El Paramito (1,550 m) near Cuicas, Trujillo on 26 October 1997 (CJS) are first records for their respective states (Chantler & Driessens 1995, Meyer de Schauensee & Phelps 1978). The species is more widespread than previously realised (e.g. Boesman (1998) reports its presence in north-west Bolívar at the Caura forest) and it has been regularly observed along the Turiamo Road (50 m) near Ocumare, Aragua (CJS).

GREENISH TYRANNULET *Phyllomyias virescens urichi*

This taxon, endemic to north-east Venezuela in Sucre, northern Monagas and northern Anzoategui (Meyer de Schauensee & Phelps 1978), was afforded species status by Cardoso da Silva (1996). It is poorly known and threatened by deforestation (Parker *et al.* 1996). Two at Península de Paria, Sucre on 9 February 1995 (DB, JC, RtE, GMK) were below the lower elevational limit of this taxon (900 m), as given by Meyer de Schauensee & Phelps (1978). They were feeding, on the forest-edge, at mid-height in a relatively small (*c.* 10–15 m) tree, gleaning food from the underside of leaves and constantly moving from branch-to-branch. Identified as *Phyllomyias* on the basis of their short, relatively stubby bills, indistinct superciliaries terminating immediately behind the eye, dark wings with indistinct whitish tips to coverts and tertial fringes, and mid-length, uncocked tails; the only other member of this genus in range, Sooty-headed Tyrannulet *P. griseiceps*, is distinctly smaller, less olive-green on the upperparts and almost lacks any trace of wingbars.

BLACK-CHESTED TYRANT *Taeniotriccus andrei*

One watched closely for about half a minute at Caño Colorado, Monagas on 13 March 1995 (NB, CGB, GMK) was the first state record and a northerly range extension of this little-known and presumably rare species. The contact call, which was apparently previously undescribed (David J. Agro pers. comm.), is most closely reminiscent of a *Hemitriccus* tyrant or *Pipra* manakin, being moderately loud, short and high-pitched. Unfortunately it was not possible to make a tape-recording. The bird was perched at *c.* 4–5 m in bamboo within *varzea* forest, below the canopy in an area where bamboo was admixed with a small, former banana plantation. Previous Venezuelan records come from Misión Araguaimujo, Delta Amacuro and north-west Bolívar, along the lower Río Caura and the central portion along the Río Carun (Meyer de Schauensee & Phelps 1978), and probably in Amazonas (Ridgely & Tudor 1994). Elsewhere the species is known from Brazil and Suriname (Parker *et al.* 1996).

RINGED ANTPIPIT *Corythopis torquata*

One watched bathing in a small pool inside wet, transitional forest at Caño Colorado, Monagas on 12 March 1995 (NB, CGB, JH, GMK) was distinguished from either Ovenbird *Seirus aurocapillus* or a waterthrush sp. by its striking and large white throat patch, grey-brown head lacking a supercilium, obvious orbital ring and crown stripe, and more concentrated and heavier underpart streaking, almost wholly restricted to the upper breast, and from *Hylopezus* antpittas by its structure and shape. Not previously recorded north of the Orinoco (Meyer de Schauensee & Phelps 1978, Ridgely & Tudor 1994) and apparently not noted by Boesman (1995), who listed significant state and regional records from this locality.

PURPLE MARTIN *Progne subis*

In recent years, significant north-easterly passage has been observed at Laguna de Mucubají, at the head of the Santo Domingo Valley, Mérida (3,470 m) in August, with migration continuing into November. Significant sample records include 150 birds per hour on 15 August 1997, over 400 birds per hour on 16 August 1997 and 100 birds per hour on 10 October 1997 (CJS). During August they are the most numerous hirundine, being accompanied by smaller numbers of Barn *Hirundo rustica* and Cliff Swallows *H. pyrrhonota*.

SAND MARTIN *Riparia riparia*

Considered a transient in Venezuela (Meyer de Schauensee & Phelps 1978, Paynter 1995). However, it has been observed on post-breeding passage crossing the Andes in a north-easterly direction at Laguna de Macubají, Mérida (3,470 m) during September–October. Small groups, amounting to *c.* 100 per hour, were counted with other hirundines on 14 September 1994, whilst several hundred were with other hirundines on 25 October 1995 and 27 October 1995 (CJS). During April, it migrates north in small numbers across the Gran Sabana (900–1,400 m), Bolívar with the more numerous Barn Swallow, where it has been recorded as late as 18 April at Peraitepuy del Roraima (1,365 m) (CJS).

CLIFF SWALLOW *Hirundo pyrrhonota*

A passage migrant, recorded from Mérida, Caracas and La Orchila (Meyer de Schauensee & Phelps 1978). Recorded in very large numbers passing north-east through the Andes at Laguna de Mucabají, Mérida State (3,470 m) during August–October. For example, over 100 per minute on 25 and 27 October 1995 with Barn Swallows and Sand Martins, and several hundred per day on 15–16 August 1997 with Purple Martins and Barn Swallows (CJS). A paper on the importance of the Mucubají pass for boreal migrants and movements of tropical species is currently in preparation.

BLACK-AND-WHITE WARBLER *Mniotilta varia*

Paynter (1995) describes this species as "not common in Venezuela, having only been noted at six or seven locations in the mountains from the Distrito Federal west to the Andes of Mérida and Táchira and once in eastern Bolívar". This is, in fact, a common wintering species in the north and west of the country; there are 50–60 specimens from these areas in the Phelps Collection in Caracas (S. L. Hilty *in litt.* 1997) and the authors have records from a large number of localities north of the Orinoco. The following are the second and third published records south of the Orinico: at least one between km 112 and km 113 on La Escalera, south of El Dorado, Bolívar on 28 January 1993 (DB, JC, RtE, GMK); and one on the lower Río Caura near Maripa, Bolívar on 14 March 1995 (NB, CGB, JH, GMK).

GOLDEN-WINGED WARBLER *Vermivora chrysoptera*

This species appears to have been overlooked in recent literature: Paynter (1995) maps only six reports from Venezuela. It is, however, frequent in the Central Coastal Cordillera, where singles can usually be observed at Rancho Grande (1,000 m), Aragua from October–March (e.g. males on 4 October 1995, 20 March 1996 and 15 November 1996; CJS), and Boesman (1998) reports its presence in Carabobo. It is similarly frequent in the subtropical and temperate Andean forests, e.g. one at the Pico Humboldt Trail, Mérida on 8 January 1993 (DJA, DB, JC, GMK) and a female there on 19 January 1998, at 2,380 m (CJS, DAS). Additionally, the first record of Lawrence's Warbler *V. chrysoptera* × *V. pinus* in South America was recorded along the La Azulita road, Mérida on 19 November 1996 (Dr & Mrs H. Mudd, R. Ryan). The bird resembled Blue-winged Warbler *V. pinus* in its greenish olive mantle, white wingbars, wholly bright yellow underparts and yellow of crown reaching the eye. Golden-winged Warbler features were the extensive black throat, triangular black cheek patch and grey wings.

BLACK-THROATED GREEN WARBLER *Dendroica virens*

One at Península de Paria, Sucre on 10 February 1993 (DB, JC, RtE, GMK). Paynter (1995) lists two other reports from Venezuela, in November 1968 (Zulia) and January 1984 (Aragua) and there are a small number of unpublished sight reports, but this is the easternmost Venezuelan record (S. L. Hilty *in litt.* 1997).

CERULEAN WARBLER *Dendroica cerulea*

Although listed as a winter resident from September–March (Meyer de Schauensee & Phelps 1978), records were previously only available from November–February (Paynter 1995). One along the Ocumare Road, Henri Pittier National Park, Aragua on 8 March 1995 (NB, CGB, JH, GMK) provides confirmation of its presence beyond February. It can be regularly seen in small numbers from October–February at Rancho Grande, Henri Pittier National Park, three males on 3 October 1995 and one there on 24 October 1996 (CJS) confirm arrival by October.

CANADA WARBLER *Wilsonia canadensis*

A male above the village of Manacal on Cerro de Humo, Península de Paria (900 m) on 25 January 1990 (CJS). This appears to be the first record in this range and Sucre (Curson *et al.* 1994, Meyer de Schauensee & Phelps 1978, Paynter 1995, Ridgely & Tudor 1989).

PARIA WHITESTART *Myioborus pariae*

One on Cerro El Olvido above Macuro on the Península de Paria (685 m) on 5 August 1988 (CJS). This is the easternmost recent record for the species, confirming its continued presence at the eastern extreme of the Península, and it is also the lowest altitudinal record for this threatened species (Collar *et al.* 1994, Rodríguez & Rojas-Suárez 1995).

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A comment on the validity of the British Great Tit *Parus major newtoni*

by Andrew G. Gosler

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The Great Tit in Britain is today recognized as a distinct subspecies *Parus major newtoni* solely on the form of its bill (Cramp & Perrins 1993). This was not always so. The type description (Appendix) given by Prazak (1894) in connection with **Typus**: K.u.k. natul. Hofmuseum in Wien. Nr. 10664, male, which was based on 19 British specimens examined at the Hofmuseum in Vienna, lists a suite of diagnostic plumage characters, none of which has withstood closer scrutiny (Hartert 1907, Witherby 1920, Saunders 1927, Witherby *et al.* 1938–41), and states that it is smaller than *P. m. major*, but makes no mention of the bill. We are told neither the sex ratio of the British series (although they were probably males) nor the origin of the *P. m. major* specimens with which they were compared. The description gives a hint that they are from central Europe, perhaps Austria. They are therefore probably not from neighbouring populations, but widely separated along what is now recognized to be a cline of body-size (in which British Great Tits are amongst the largest forms, not smaller as stated in the type description) and colouration (Snow 1953), and lying on different sides of the Alpine barrier (Harrison 1945).

The first clear mention of a racial difference in the bill comes from Hartert (1907) who reported:

> (*P. m. newtoni* is . . .) "*Easily distinguished from* Parus major major *(typical in Scandinavia, Germany, France, Holland, Belgium etc.) by its stout, powerful bill. The alleged differences in colour are not constant.*" E. Hartert (1907)

Between 1907 and 1945, no systematic analysis of bill differences was made. Hartert (1907) himself gave no quantitative evidence for his assertion. Witherby (1920) illustrated the difference in bill form, and stated that in *newtoni* the bill tended to be longer, stouter, and with a decidedly straighter culmen than that of *major* although the differences were ". . . *more apparent by comparison than by measurement*". No other reliable differences had been found. In updating Saunders (1927) *Manual of British Birds*, Eagle Clarke repeated that *newtoni* differed only in the form of the bill, but again gave no quantitative evidence. Although Witherby *et al.* (1938–41) presented some ranges of bill measurements for *newtoni* and *major*, their data are inadequate to determine statistical significance.

So by 1945 all standard works agreed that the British Great Tit was distinct on bill characters alone although none gave any substantial evidence in support of this. In overall size and colour, they agreed that there was no consistent difference from nominate *major.* Harrison (1945) realized that the existing taxonomy was essentially unsupported. In scanning through several series of *newtoni* and *major* skins, he noticed that the reported bill differences were not at all clear cut. Hence in 1945 he attempted, by examination of 50 *newtoni* and 50 *major* skins at the British Museum (Natural History), to quantify this difference to assess its extent and consistency. He found that 42% of *newtoni* skins had a straight culmen (judged by eye) while only 4% of *major* had (96% had a decurved or convex culmen). He also found a tendency for *newtoni* to have a greater bill coefficient (depth × breadth) than *major.* I have tested Harrison's data by *t*-test and find this 'tendency' to be highly significant statistically.[1] Harrison's (1945a) data were taken to support the accepted status of *P. m. newtoni* as a distinct subspecies although Harrison accepted that the southern English populations were not genetically isolated from the continent so that the situation might be rather 'fluid' between the nearest populations of the two races.

Harrison (1945a) clearly went to great lengths to standardize his data collection as far as was possible. He used only adult males. Care was taken that all *major* specimens came from north and west of the Alps, which he recognized as a possible barrier to gene flow (Harrison 1945a).

[1] A test of Harrison's data ($t_{98}=10.73$, $P<0.001$).

Hence we must assume that specimen selection and the measurement itself were carried out systematically. There are, nevertheless, two problems remaining. The first concerns use of the 'bill coefficient' itself. Many, perhaps most, Great Tit skins in the Natural History Museum show considerable mandibular retraction. In most, this has affected only the lower mandible, but in some the upper mandible is depressed also. This displacement is caused by contraction of the jaw muscles on drying. Hence in many cases, the bill is set open, and even when closed, the lower mandible may be retracted into an unnatural position. Bill depth cannot be measured reliably in these specimens. These problems should have less effect on the measurement of the bill length. The second problem (and one which was unknown to Harrison) arises from my own recent studies on the Wytham Great Tit population near Oxford showing considerable seasonal change in bill size and shape (Gosler 1987a, 1987b, 1990). In those papers I showed how the bill-index (bill depth/bill length), an ecologically-relevant character, changed within individuals in relation (probably in response) to changes in diet from hard seeds, such as beechmast, in winter to soft invertebrates, especially caterpillars, in the spring. The bill was therefore stoutest in winter, the first and fourth quarters of the year, and most slender when the birds bred in the second and third quarters of the year.

In this paper I compare bill size and shape of *newtoni* and *major* skins from the British Natural History Museum, Tring, and test whether differences between them might have arisen from a seasonal bias in collection of the two series. The validity of such characters for infraspecific taxonomy is briefly considered.

Methods

Two analyses were carried out. The first was a simple simulation study which aimed to determine whether apparent geographical variation could be generated from seasonal changes in the bill through biases among populations in the dates of collection. The second directly compared bill-length and culmen-curvature in *newtoni* and *major* skins in the Natural History Museum.

For the simulation study, I recorded the dates of collection of all *P. major* (301 in all) skins from the countries listed in Table 1. This table also shows the numbers of skins available from each quarter of the year (first quarter=Jan–March etc.). A simulation data set was then constructed in which the year-quarter was replaced by the observed mean bill-index for the appropriate year-quarter of Great Tits trapped in Wytham during routine trapping (see Gosler 1987) between 1982 and 1997. These values are given in Table 2. The bill-index was calculated as the bill-depth at the deepest point of the gonys divided by the bill-length to skull (as Gosler 1987). Bill measurements were taken to 0.05 mm with a vernier caliper. Mean bill-indices were calculated for each country from these substituted values and the whole data set, tested by one-way ANOVA for differences among country means.

For the direct comparison I selected skins of 40 British and 40 continental adult males. The former were the first 40 skins encountered

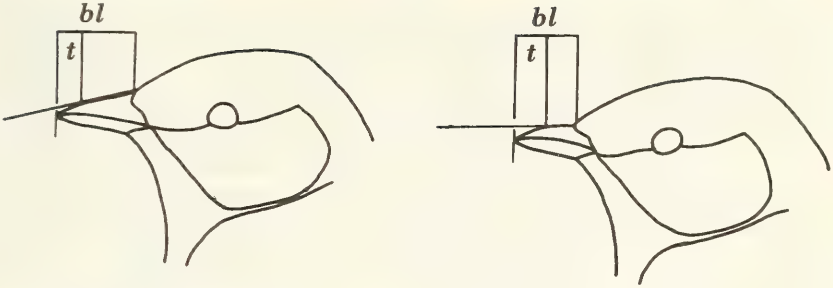
TABLE 1
Sample sizes available at the Natural History Museum from each country by sex and year-quarter (Q1, Jan–Mar, Q2, Apr–Jun, etc)

	Males				Females			
	Year-quarter				Year-quarter			
Country	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Norway	0	0	1	2	0	0	1	2
Sweden	6	0	4	6	2	0	0	1
France	13	0	4	19	4	1	4	12
Holland	1	2	0	1	1	2	0	0
Denmark	2	0	0	3	0	0	0	0
Germany	2	0	0	5	1	0	0	1
Belgium	0	0	1	0	0	0	0	2
England & Wales	26	12	6	47	18	4	2	27
Scotland	10	7	3	5	5	2	2	4
Ireland	3	0	0	3	6	0	0	3

TABLE 2
Mean bill indices (bill-depth/bill-length) observed in live, trapped Great Tits at Wytham Woods, Oxford. Means are given for each year-quarter calculated from measurements of 4949 individual Great Tits (2387 male, 2562 female) trapped between 1982–1997.

Year-quarter	Mean male bill-index	Mean female bill-index
1 (Jan–Mar)	0.34619	0.33549
2 (Apr–Jun)	0.34276	0.32645
3 (Jul–Sep)	0.34507	0.33250
4 (Oct–Dec)	0.34907	0.33559

from England (because Clancey 1945 and Harrison 1945b considered that some Scottish populations seemed closer to *major* in the form of the bill). The continental birds comprised all measurable skins from France (30), Holland (4), Denmark (5) and Belgium (1). From each I recorded the month of collection and measured the bill-length as above. To measure curvature of the culmen each skin was photographed in lateral view. The photographic negatives were later examined under a low-power microscope fitted with an eye-piece graticule. The straight edge of an acetate film strip was laid along the image of the culmen from the bill's base and the distance (t) from the bill tip to the point at which the acetate edge parted from the culmen (point of curvature) was measured with the graticule. The index of curvature was then calculated as this distance expressed as a percentage of the total bill-length (t/bl in Fig. 1). Hence if the whole culmen was straight, the index would be 0/bill-length=0%, and if just the first (proximal) quarter was straight an index of 75% would be found etc. To test the repeatability of this measurement, a subset of 17 negatives, selected at random, was remeasured by an independent observer. These



Parus major newtoni *Parus major major*

Figure 1. The measurement of culmen curvature from photographic negatives. The index of curvature is taken as *t/bl* (see text). Two examples are given, which also illustrate the bill differences between *Parus major newtoni* (here with a curvature index of 25%) and *P. m. major* (here 50%). The examples, which are similar to drawings in Witherby (1920), p. 227, were drawn from photographs.

measurements were significantly correlated with my own,[2] indicating that, while not perfect, the curvature index should be sufficiently reliable to compare populations.

Bill-length and curvature were each analysed by means of a two-way ANOVA with season and population (British or continental) as factors together with their interaction. Unfortunately, no adequate British skins were available from the third quarter of any year. To overcome this problem, which would have made impossible the fitting of an interaction term, I calculated the year-quarters as Q1. Dec–Feb, Q2. Mar–May, Q3. Jun–Aug and Q4. Sep–Nov. This small adjustment provided adequate sample sizes while retaining the broad pattern of seasonal change in the bill.

Results

Table 3 shows the mean bill indices calculated from the simulated data set constructed from Wytham data. The differences across countries were statistically significant for both sexes[3] indicating that apparent geographical variation could be generated simply from date-biased sampling from a seasonally-varying population. Of course, this does not necessarily mean that it had been.

Table 4 shows mean bill-lengths and percentage curvatures by seasons for the 40 British and 40 continental skins measured and photographed. The two-way ANOVA of bill-length found both a

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[2] Measurements of culmen curvature made by an independent observer were significantly correlated with my own ($r_{15}=0.685$, $P<0.01$).

[3] Differences across countries were statistically significant for both sexes (males: $F_{9,184}=2.44$, $P=0.012$, females: $F_{9,98}=2.09$, $P=0.044$).

TABLE 3

Mean bill indices calculated for each sex and country from a simulated dataset derived by substituting the mean indices from Wytham (Table 2) for the season (year-quarter) when collected, shown in Table 1. Differences among these means were statistically significant (see text).

	Mean ± 1 s.d. male Bill Index	*n*	Mean ± 1 sd. female Bill Index	*n*
Norway	0.34774 ± 0.00231	3	0.33456 ± 0.00178	3
Sweden	0.34699 ± 0.00172	16	0.33552 ± 0.00006	3
France	0.34759 ± 0.00163	36	0.33455 ± 0.00222	21
Holland	0.34519 ± 0.00305	4	0.32946 ± 0.00522	3
Denmark	0.34792 ± 0.00158	5		0
Germany	0.34825 ± 0.00141	7	0.33554 ± 0.00007	2
Belgium	0.34507 ± 0	1	0.33559 ± 0	2
England & Wales	0.34715 ± 0.00225	91	0.33472 ± 0.00251	51
Scotland	0.34567 ± 0.00224	25	0.33367 ± 0.00339	13
Ireland	0.34763 ± 0.00158	6	0.33552 ± 0.00005	9

highly significant population effect,[4] with the British skins being longer-billed, and a significant seasonal effect,[5] but no significant interaction between population and season, indicating that the seasonal pattern was similar in both populations. The two-way ANOVA of culmen-curvature again revealed a highly significant population effect,[6] but no significant seasonal effect or season × population interaction. So culmen shape may be more constant than bill-length. Finally it is worth mentioning that bill-length and curvature were uncorrelated, either across all 80 skins[7] or within their respective populations.

Discussion

The present analyses have shown quantitatively that seasonal variation observed in bill-shape within individuals is sufficient to generate the appearance of significant geographical variation if collection dates are biased. However, in reality, the differences in bill-length and curvature between populations were much greater than could be accounted for by such bias alone. Furthermore, these two bill characters, which Witherby (1920) considered taxonomically relevant but essentially unmeasurable, prove not to be so intractable, and are confirmed to differ in a highly significant way between populations. It is also of interest to note that the seasonal pattern described from the Wytham population was also repeated in the skins of both British and continental origin.

[4] Two-way ANOVA population effect on bill length ($F_{1,72}=9.69$, $P=0.003$).

[5] Two-way ANOVA seasonal effect on bill length ($F_{3,72}=3.96$, $P=0.011$).

[6] Two-way ANOVA population effect on culmen curvature ($F_{1,72}=9.69$, $P=0.003$).

[7] Bill-length and culmen curvature were uncorrelated ($r_{78}=-0.08$ n.s.).

TABLE 4

Mean (± 1 s.d. and *n*) bill-lengths and percentage culmen curvature, by year-quarters (Q1, Dec–Feb, Q2, Mar–May, etc.) of 40 British and 40 continental male Great Tits from the Natural History Museum. Bill-lengths differed significantly between seasons and populations, bill-curvature differed between populations (see text)

		Year Quarter			
Measure	Country	Q1	Q2	Q3	Q4
Bill-length	British	12.99 ± 0.524 (13)	12.38 ± 0.409 (12)	13.70 ± 0.0 (1)	12.97 ± 0.478 (14)
(mm)	Continental	12.53 ± 5.85 (9)	12.27 ± 0.32 (7)	12.40 ± 0.0 (1)	12.49 ± 0.464 (23)
Bill-curve	British	36.6 ± 9.25 (13)	39.8 ± 11.46 (12)	21.9 ± 0.0 (1)	36.8 ± 8.77 (14)
(%)	Continental	45.6 ± 10.47 (9)	45.5 ± 11.53 (7)	50.0 ± 0.0 (1)	44.7 ± 10.91 (23)

This study therefore confirms the views of earlier workers that the bills of British Great Tits differ on average from those of their nearest continental conspecifics. However, a question remains as to whether this justifies recognition of *P. m. newtoni* as a distinct subspecies. Amadon & Short (1992) define a subspecies as '... a recognized allopatric subpopulation which is (still) genetically compatible with other subpopulations, but is set apart by a concordant array of genetic and phenotypic characters'. From their evolutionary approach to infraspecific taxonomy, they view subspecies as potential, if not incipient, species. The phenotypic plasticity of the Great Tit bill, that I have already demonstrated, in which the form of the bill tracks changes in the bird's diet, must call into question the validity of a taxon based solely upon it. Furthermore, the greater length of the bill in British Great Tits is consistent with their greater body-size, and this is itself consistent with its position on a cline (Snow 1953). One is left then with the fact that the bill is somewhat deeper than expected from body-size (Snow 1953), but with little idea of the source of this variation, and with an uneasy sense that this alone hardly constitutes a 'concordant array of ... characters'. At least as far as currently described characters are concerned, the British Great Tit may be more appropriately considered as a deme '... a localized diagnosable subpopulation of less than subspecies rank' (Amadon & Short 1992). The implications of this study for the infraspecific taxonomy of other groups, in which even less is known about phenotypic plasticity of the bill (and perhaps other parts) than in the Great Tit, may be profound.

Summary

For over one-hundred years the Great Tit in Britain has been recognized as a distinct subspecies *Parus major newtoni*. All of the characters taken in the type to have been diagnostic have now been dismissed and modern diagnosis has been based, with scant evidence, on characters of the bill alone. Recent work has shown that the Great Tit bill is phenotypically plastic, varying seasonally in relation to changes in individual ecology. New data are presented here which support the earlier view that the British Great Tit is phenotypically distinct from *P. m. major*. Nevertheless, the validity of a taxon based on a single, phenotypically-plastic, trait is questioned in a modern context of evolution-based taxonomy. This may have implications for other taxa.

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Appendix

Type description of *Parus major newtoni* (Prazak 1894, p. 239). Translated from German by M. G. Wilson.

The British Great Tit differs from the continental bird on its smaller average size, and in having duller plumage although the colour pattern is the same. The black of the crown and the broad belly stripe are not as pure as in the continental bird and is almost without gloss. The cheeks are a dirtier white. The ash-grey of the rump is reduced to a minimum, being squeezed out by the olive-green of the back. The otherwise blueish ash-grey tail feather edges are—in the British bird—blackish, or at least much darker than in the central European specimens. The edges of the secondaries similarly show a marked suffusion with the back colour and the bar formed by the tips of the upper wing coverts is less clear and clean in colour. The yellow of the underside is less intense with a somewhat greenish flush.

L. Olph Galliard recognized this form as distinct from the European Great Tit but gave no name. I make so bold as to name this insular subspecies after the greatly honoured master of scientific ornithology at Cambridge, Professor A. Newton.

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Plumage differences and taxonomic status of three similar *Circaetus* snake-eagles

by William S. Clark

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Three similar taxa of snake-eagles, Short-toed Snake-eagle, *Circaetus gallicus*, Black-breasted Snake-eagle, *C. pectoralis* and Beaudouin's Snake-eagle, *C. beaudouini*, were long thought by most authorities to be separate species because of differences in adult and juvenile plumages. They have allopatric breeding ranges. Beaudouin's Snake-eagle is resident in West and Central Africa, Black-breasted Snake-eagle is resident in East and southern Africa and Short-toed Snake-eagle breeds from southern Europe and northern Africa east to India. Northern and western populations of the Short-toed are migratory, moving into the ranges of the other two taxa during the northern winter (Meyburg *et al.* 1996, Brown *et al.* 1982).

Peters (1931) treated the three taxa as subspecies of a single species, without presenting reasons or citations for doing so. Meinertzhagen (1951), Brown and Amadon (1968), Stresemann and Amadon (1979), Brown *et al.* (1982) and Amadon and Bull (1988) followed this treatment, all without any arguments presented for doing so. However, other authorities continued to consider them separate species (e.g Mackworth Praed & Grant 1962, White 1965, Cramp & Simmons 1980), all giving the argument of differences in plumage.

Brown (1974) agreed that the adults of the three taxa are distinctive but reported five instances of supposed interbreeding among the taxa in support of the single species view: two of *pectoralis* × *beaudouini*, two of *beaudouini* × *gallicus* and one of *gallicus* × *pectoralis*. Brown (1974) was cited as justification for single-species treatment by Brown *et al.* (1982) and the odd arrangement in Sibley & Monroe (1990) with *pectoralis* as a separate species and *beaudouini* placed within *gallicus*. However, Brown's (1974) descriptions of the alleged adults of *beaudouini* and *gallicus* were not detailed and his identifications cannot be verified. Most likely he was not aware that *pectoralis* has a subadult plumage that appears much like the adult of *gallicus* and somewhat like that of *beaudouini*; it is described and well depicted in Finch-Davies & Kemp (1980) and Newman (1983: 160–161) and described but not depicted in del Hoyo *et al.* (1994) and Zimmerman *et al.* (1996). All of his alleged cases of interbreeding can be explained by adult *pectoralis* breeding with subadult *pectoralis* or pairs of subadult *pectoralis*.

Some taxonomic treatments of the Falconiformes (e.g., del Hoyo *et al.* 1994) consider the three taxa to be separate species. To support that view, I offer arguments against the claimed interbreedings reported in Brown (1974).

Methods

I have examined over two hundred specimens of all three taxa in numerous museums, including the Natural History Museum, Tring (BMNH), Transvaal Museum, Kenya Natural History Museum and the American Museum of Natural History. I have observed and taken photographs of all three taxa in the field: Short-toed Snake-eagle in Israel, Spain and India, Beaudouin's Snake-eagle in Senegal and Black-breasted Snake-eagle in South Africa, Botswana, Kenya and Zimbabwe.

Results

Adults of all three taxa are distinctive and easily distinguished by the markings on their lower underparts, as depicted, for example, in Brown & Amadon (1968). The bellies of Black-breasteds are unmarked, those of Beaudouin's have narrow dark bars and those of Short-toed have wider dark blobs. There are other differences, especially in dorsal and breast colour; this is darkest and almost black on Black-breasted, darker brown on Beaudouin's and paler brown on Short-toed, with males of the latter usually showing pale vertical streaks in the dark breast. (The adult Beaudouin's depicted in del Hoyo *et al.* (1994) is not correct; it should have a much darker head, breast and upperparts and fewer, longer dark belly stripes.) Further differences lie in the markings on the underwings. Short-toeds have rufous to dark brown markings on the wing linings (Cramp & Simmons 1980: 112, Porter *et al.* 1981: 78–79), a feature not found on the other two. Beaudouin's and Black-breasteds both have white secondaries with three black bars (Zimmerman *et al.* 1996). Short-toeds have white secondaries with three incomplete dark bars.

Black-breasted Snake-eagles have an intermediate or subadult plumage that is different from those of juvenile and adult. This plumage is similar to that of the Short-toed Snake-eagle in having a dark breast forming a bib and short dark blobs on the belly (shown in Finch-Davies & Kemp 1980 on plate 32 and Newman 1983: 161). Subadult Black-breasted Snake-eagles can be distinguished from Short-toed Snake-eagles by their lack of markings on the underwing coverts, a feature present on even the palest Short-toed Snake-eagle. I have seen this subadult plumage several times in the field and in dozens of specimens, including at least three in the BMNH.

Juveniles of all three taxa are similarly easy to separate. Short-toeds are the most distinctive, appearing very similar to adults (Cramp & Simmons 1980). They differ from adults only in having a more yellowish eye colour and a rufous cast to the breast. Further, they lack the outermost dark band near the tips of the secondaries. Juveniles of the other two are quite different from adults; Black-breasted Snake-eagles have brown upperparts and rufous underparts, the latter sometimes with whitish mottling (Zimmerman *et al.* 1996), whereas Beaudouin's Snake-eagles are overall a darker brown (Serle & Morel 1977). The colour differences are easily seen on specimens and in the field.

Discussion

Brown (1974) based his classification of these three taxa as a single species on his observations of what he interpreted as interbreedings of mixed pairs. However, all of his observations can be explained by misidentifications of subadult Black-breasted Snake-eagles as adults of the other taxa. Brown (1974) provided little in the way of detailed descriptions of the breeding eagles in question other than to state that his alleged adult Beaudouin's and Short-toed Snake-eagles had barred underparts and, further, provided no specimens nor published photographic evidence, other than to note that one pair was photographed by J. Hunter Sutherland, with no indication where these photographs are stored.

Brown (1974) also states that some specimens in the BMNH suggest that intermediates between *beaudouini* and *pectoralis* occur. I have studied specimens of all and found that all are easily assigned as to taxon.

The species account in del Hoyo *et al.* (1994) incorrectly states that the juvenile Beaudouin's is overall pale with a pale head. This is most likely due to the misidentified juvenile *gallicus* that I found with the *beaudouini* in the BMNH. Four juvenile specimens and one almost fully feathered nestling of *beaudouini* in the BMNH are all overall dark brown, as described by Serle & Morel (1977).

Interbreeding between *pectoralis* and *beaudouini* near their distributional boundaries is always a possibility. Voous (1996) reports an adult specimen of *beaudouini* collected within the range of *pectoralis* in Uganda, but his description was vague. C. Roselaar confirmed the identification of this specimen.

Comparison of the DNA among these taxa is the next step. Helbig & Seibold (pers. comm.) have compared the mitochondrial DNA of *pectoralis* and *gallicus* and found their differences to be well above the species level. They will publish these results later.

Short-toed, Black-breasted and Beaudouin's Snake-Eagles differ sufficiently in plumage to be considered as separate species, as was done by del Hoyo *et al.* (1994) but not by Amadon & Bull (1988) and Sibley & Monroe (1990).

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A new subspecies of the Northern Beardless-Tyrannulet *Camptostoma imberbe*

*by Kenneth C. Parkes & Allan R. Phillips**

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The Northern Beardless-Tyrannulet *Camptostoma imberbe* is a small tyrannid breeding from the southwestern United States to northern Costa Rica, beyond which it is replaced by the allospecies *C. obsoletum*. The English and scientific names of *C. imberbe* refer to the near absence in this genus of the rictal bristles typical of Tyrannidae.

Traylor (1979) recognized two subspecies of *C. imberbe*: a western form *C. i. ridgwayi* (Brewster) found from southern Arizona to Morelos and Michoacan in Mexico, and the eastern *C. i. imberbe* Sclater found from southern Texas through eastern and southern Mexico (including the Yucatan Peninsula) to northwestern Costa Rica.

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*Deceased.

Senior author's note: This description was one of many joint projects uncompleted at the time of Dr. Phillips' death. I have compiled it from detailed notes left at the Carnegie Museum of Natural History by Dr. Phillips.

More than 70 years ago, Griscom (1926) called attention to certain differences between mainland Mexican specimens and two immature males of *C. imberbe* that he had collected on Isla Cozumel, off the east side of the Yucatan Peninsula. He refrained from a formal description in default of adult specimens from Cozumel. Collections made by the writers and R. W. Dickerman in the 1960's have provided ample material to define the characters of the Cozumel population, which is more distinct from the nominate race than is the western *ridgwayi*; the latter is slightly larger than *imberbe*, and differs at most slightly in colour (van Rossem 1930). The Cozumel population may be called:

Camptostoma imberbe thyellophila

Holotype

Carnegie Museum of Natural History 143125, adult male (testes 3 × 2 mm, cranium fully pneumatized), from 11 km SW of San Miguel, Isla Cozumel, Quintana Roo, Mexico, collected by Kenneth C. Parkes and prepared by Juan Nava S. on 9 November 1965. Original number KCP 2734.

Diagnosis

Compared with *C. i. imberbe*, wing bars brighter and more richly rufescent (paler and greyer in *imberbe*), this colour continuing as narrow edgings on remiges (pale grey or whitish in *imberbe*); rump paler and greener than back (paler and browner in *imberbe*). Lower mandible with dark tip less extensive; colour of lower mandible and base of upper mandible "dull orange" in one specimen of which I recorded the bill colour in the field. Two specimens of *imberbe* from Costa Rica were annotated as having the lower mandible "flesh" and "pale flesh"; two from Belize were annotated as "flesh colour" and "yellowish".

Measurements

No significant difference between the subspecies was found in wing or tail length. Cozumel specimens have bills that are longer and somewhat more slender than those from elsewhere. Culmen length in both sexes differs (Mann-Whitney U-test, $P<0.05$). The difference in bill depth *per se* is not statistically significant, but if culmen length is taken into consideration such that a "slenderness index" is computed as bill depth at base divided by culmen length, the samples are separable at the $P<0.05$ level (Table 1).

Paratypes

Five adult males in good condition (i.e., with unbroken bills and relatively unworn plumage) are here designated as paratypes. They are as follows (with locality on Cozumel indicated): CM 142075 (2 km NE of San Miguel, 21 Jan 1965), 143089 (6 km NE of San Miguel, 6 Nov 1965), 143199 (11 km SW of San Miguel, 15 Nov 1965), 144760 (3 km

TABLE 1
Bill data (mean ± standard deviation, range) for two subspecies of *Camptostoma imberbe*

	C. i. imberbe		*C. i. thyellophila*	
	♂♂ (*n*=8)	♀♀ (*n*=5)	♂♂ (*n*=7)	♀♀ (*n*=4)
Culmen from base	9.69 ± 0.37 (9.0–10.0)	9.50 ± 0.50 (9.0–10.0)	10.64 ± 0.24 (10.5–11.0)	10.50 ± 0.41 (10.0–11.0)
Bill depth/length ("slenderness index")	0.29 ± 0.01 (0.28–0.31)	0.31 ± 0.02 (0.28–0.35)	0.26 ± 0.02 (0.24–0.29)	0.27 ± 0.02 (0.24–0.29)

E of E end of west-east road, 23 Nov 1971), and 144761 (8 km SW of San Miguel, 24 Nov 1971).

Habitat

The Northern Beardless-Tyrannulet on the Yucatan Peninsula was described by Paynter (1955) as uncommon, in "second growth, scrub, and light forest". It was apparently very uncommon to rare on Isla Cozumel during the early and middle 20th century; Nelson and Goldman saw only one during their stay 4–18 April 1901 (1901, unpublished field notes). Paynter (1955) failed to find the species during "several weeks . . . in January" 1949, as did Bond (1961) during 11–25 February 1961. Griscom (1926) collected two specimens, apparently the only ones he saw.

Much of Isla Cozumel is forested—not especially high forest, but not, in general, suitable for *Camptostoma*. On our collecting trips in 1965, we found it to be moderately common in suitable habitat, but absent from the heart of the forest. In September 1967, Isla Cozumel was devastated by Hurricane "Beulah", which toppled many of the largest trees in the forest, and in many places only scrubby saplings and clearings remained (Parkes 1969). On visits to Cozumel in April 1968 and November 1971, the forest had regenerated very little, but we found substantial numbers of *Camptostoma* in the hurricane-cleared areas of the forest, now apparently excellent *Camptostoma* habitat.

Etymology

In view of the history of the Cozumel population, it seems appropriate to give the resident subspecies the name *thyellophila*, from the Greek *thyella*, storm or hurricane, and *phil-*, loving, fond of.

Specimens examined

C. i. ridgwayi: Arizona 2 (topotypes). *C. i. imberbe*: Mexico: Tamaulipas—2, Nuevo Léon—1, Hidalgo—1, Distrito Federal—1, Campeche—1, Quintana Roo—2. Belize—4. Honduras—2. Costa Rica—2. *C. i. thyellophila*: Mexico: Quintana Roo, Isla Cozumel 13.

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Plumages of the Red-collared Honeyeater *Myzomela rosenbergii longirostris* from Goodenough Island, D'Entrecasteaux Islands, Papua New Guinea

by Mary LeCroy & William S. Peckover

Received 15 January 1998

The montane Red-collared Honeyeater is found throughout mainland New Guinea (nominate subspecies *M. r. rosenbergii*) but, offshore, only on Goodenough Island in the D'Entrecasteaux Archipelago. Mayr and Rand (1935: 12–13) described *M. r. longirostris* of Goodenough, based mainly on its much longer bill. Their material comprised 1 male (the holotype), 4 immature males, and 1 immature female, now in the American Museum of Natural History (AMNH). The immature male was briefly described but the female was not. Later, Hobart Van Deusen collected four adult males (Mayr and Van Deusen, 1956: 5), also in AMNH. Harry Bell (1970) reported on a visit to Goodenough but did not encounter this species at the lower altitudes he surveyed. We camped 10–12 August 1988 at 1,060 m, above Galuwala Village, and collected 2 immature males and 3 females of *M. r. longirostris*. For comparison we had a large AMNH series of the nominate subspecies from many parts of New Guinea.

The adult males of the two populations—black with a brilliant red collar, back, and rump, and black axillaries—are superficially similar except for the much longer bill in *longirostris*. However, on closer examination the red on the back and throat of *longirostris* appears darker and more saturated than that on the nominate form. The feathers of these red areas have bands of several colours: proximally dark grey, then a narrow band of black, a band of tan, and distilly a red tip that overlaps feathers beneath. The tan band is much broader in New Guinea birds, being darker and narrower in Goodenough birds and sometimes lacking. The extent to which the tan band shows depends somewhat on the "make" of the skin, but its width is diagnostic. The narrower and darker tan band on Goodenough birds causes red areas to appear darker and more saturated.

The adult female of *longirostris* has not been described and it differs from the nominate female, illustrated in Coates (1990: 249). In the AMNH collection, adult females of nominate *rosenbergii* collected with an enlarged ovary have the head dark, slightly scaly in appearance; the neck and back feathers have tan centres without red; the rump is red; the primaries, secondaries and rectrices are solid blackish-brown; some of the tertiaries have tan tips, varying individually in width. The throat is blackish, and feathers on the sides of the throat may have light tips; feathers of the red "bib" have three colour bands, lacking the narrow black band (see above); the belly is deep tan with dark grey feather bases apparent.

Adult females of *longirostris* are very different, having an overall olive-green wash—a colour not seen in nominate birds. Our three specimens have extensive red in the nape, upper back and rump. The immature female is acquiring red feathers in these areas. Below, the specimens are olive-grey with yellowish tips to throat feathers and have a red "bib". The younger individual has less extensive red on the breast and more extensive tan centres to the feathers that will be red. The red feathers have a greyish base, a narrow tan bar and a red tip, agreeing with the nominate females in lacking a narrow black band. The face is of the same olive-grey colour as the underparts and there is a definite dark post-ocular stripe with an olive-grey streak above it. The tertiaries lack tan tips.

Immature males of both subspecies are similar to their respective females, but are more variable. Nominate *rosenbergii* tend to look more brownish and patterned than females because they have more extensive tan centres to the feathers that will become red; all have at least some red on the rump and breast but none on the back or neck. The axillaries are white in females and immature males of both subspecies.

Of our six immature Goodenough males, the four with the most red in their plumage have an olive wash overall, but it is not as noticeable as in the female because the feather bases are more blackish, thus causing them to appear darker. There are no light tips on the throat feathers and the tan band is narrow or lacking in red feathers on the neck, back, rump, and breast. There are scattered tan tips on some tertiaries. The two immature males with least red (presumably younger), approach in appearance the female and young male of the nominate form, in that they are more brownish overall and have broad tan tips to the tertiaries and a scaly appearance to the back (due to the tan centres of the feathers

TABLE 1
Measurements (mm) and weights (g) of *Myzomela rosenbergii longirostris*

	Wing	Tail	Bill from base	Tarsus	Weight
Adult male	64.0–69.0	44.0–47.0	24.0–25.0	17.5–19.0	12.4–15.6
(n=5)	(65.6)	(46.0)	(24.4)	(18.3)	(n=3)
Imm. male	61.5–64.5	41.5–44.5	24.0–26.0	17.5–18.0	9.0, 9.8
(n=6)	(62.9)	(42.4)	(24.8)	(17.7)	
Female	57.0–61.0	38.5–43.0	21.5–22.5	16.0–17.5	7.5–8.5
(n=4)	(59.1)	(40.2)	(22.1)	(17.0)	(n=3)

that will be red). A few head feathers have narrow pale centres, giving the head a slightly scaled appearance.

Six juvenals of the nominate form are overall brownish, with blackish bases on body feathers, and tertiaries with broad tan tips. Three of these birds have a touch of red on their breasts, but none has red rump feathers. The juvenal of *longirostris* is undescribed.

In Koopman's (1957) analysis of the genus *Myzomela*, *M. rosenbergii* is listed in his "Section II, without close relatives." His discussion is based, however, on females of *M. r. rosenbergii*. With females of *M. r. longirostris* now in hand, a re-interpretation of relationships presents itself. The appearance of female and immature male *longirostris* approaches that of some female and immature male long-billed populations of *M. cardinalis*. Adult males differ in that the red of the nape and breast extends up to cover the entire head in populations such as *M. c. nigriventris* and *M. c. cardinalis*. It seems possible that the relationship of *longirostris* to *M. cardinalis* is closer than has been proposed in the past and that *cardinalis* as now understood is polyphyletic. Or the relationship may possibly lie with the superspecies comprising, in the Solomons, *M. lafargei*, *M. eichhorni*, *M. melanocephala*, *M. malaitae*, and *M. tristrami* (Galbraith & Galbraith, 1962; Salomonsen, 1967); and, in the Bismarck Archipelago, *M. pammelaena* (Diamond, 1976).

On Goodenough, we found *M. rosenbergii* common in the oak and *Castanopsis* forests at 1,000 m and above, and it is apparently confined to these altitudes. *M. nigrita forbesi*, the Goodenough low altitude form of *Myzomela*, is considerably smaller [wing, 9 males 58.0–61.5 (60.0 mm) and 3 females 52.0–54.0 (53.0 mm)] than *M. rosenbergii* (See Table 1). The male is all black except for a red spot on hind crown and the female is unpatterned olive-grey with dull red tips to feathers of head and throat; both have white axillaries. We did not encounter it between 620 and 1,075 m and altitudinal overlap between the two species has not been reported.

M. rosenbergii is the only *Myzomela* found on New Guinea above 2,000 m and is considerably larger than *M. adolphinae*, with which it may overlap at lower altitudes. If *Myzomela rosenbergii* were derived from populations to the east, then birds reaching New Guinea from Goodenough would have been able to coexist with *M. adolphinae* and to exploit the unoccupied montane niche. This would have enabled the species to spread westward rapidly and without further differentiation.

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We dedicate this paper to the memory of the late Dr. Karl, F. Koopman, whose paper on *Myzomela* provided many insights into relationships within this fascinating genus.

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On the status of the Barred Woodcreeper *Dendrocolaptes certhia* in the Yucatan Peninsula

by Kenneth C. Parkes

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The Barred Woodcreeper *Dendrocolaptes certhia* is one of the largest members of the family Dendrocolaptidae. As traditionally understood, it has a wide distribution in the Neotropics, from southern Mexico to Brazil, and is highly polytypic, with 12 subspecies admitted by Peters (1951). Marantz (1997) favoured splitting off the populations north of Amazonia as a separate species, *D. sanctithomae*, a move also favoured by S. N. G. Howell (in litt.). I have not reviewed the evidence for this split, and will use the name *D. certhia* in this paper for convenience, as not only does all of the pre-Marantz literature use that name for the species, but Marantz (1997) himself does so as well. In this paper I review the taxonomy and distribution of the Barred Woodcreeper in the Yucatán Peninsula. Acronyms for museum collections cited are as follows: CM=Carnegie Museum of Natural History; CU=Cornell University; DMNH=Delaware Museum of Natural History; YPM=Peabody Museum of Natural History, Yale University.

Most of the Mexican range, south to Nicaragua, is occupied by *D. c. sanctithomae* (Lafresnaye). Paynter (1954) described a new subspecies as *Dendrocolaptes certhia legtersi* based on five YPM specimens from central Quintana Roo, Yucatán Peninsula (four from "Carrillo Puerto"= Felipe Carrillo Puerto, and one from Tabi, localities about 15 km apart). [N.B. The YPM collection holds six, not five specimens of *legtersi*; YPM 15308 (which I have before me), although collected on the same expedition as two of the specimens listed by Paynter (1955), was not listed there]. Subsequent to Paynter's own book on birds of the Yucatán Peninsula (1955), *legtersi* has seldom been mentioned in the literature. In the "Checklist of the Birds of Mexico" (Miller *et al.* 1957), Griscom (compiler for the Dendrocolaptidae) acknowledged in a footnote that Paynter had recently described *legtersi*, but it was not given a full entry as none of the co-editors had examined specimens. Binford (1965), in describing *D. c. sheffleri* from Pacific Oaxaca, mentioned differences from *legtersi*, but did not state what specimens he had seen. In Howell & Webb (1995) an asterisk is applied to the scientific name in the headings of the species accounts if more than one subspecies is found within the area covered by the book. Within the species account, the subspecific names are normally not specified unless the subspecies are field-identifiable. The asterisk at the account of *Dendrocolaptes certhia* is attributable to the well-marked *D. c. sheffleri* of Pacific Oaxaca and Guerrero (Howell, in litt.). Finally, *legtersi* is discussed by Marantz (1997).

Although several bird species are represented on the Yucatán Peninsula by more than one subspecies, their ranges are normally associated with the major vegetation zones (see map in Paynter 1955); for example, several subspecies are confined to the narrow zone of coastal scrub in northern Yucatán. It would seem unlikely on the face of it for subspecific differentiation to have taken place in a small area in the middle of the essentially uniform Rain Forest Zone. No previous author seems to have dealt with this point.

Marantz (1997) examined four specimens (clearly from the type series) of *legtersi*, and commented that the "pale, nearly gray . . . underparts of the four *legtersi* specimens made them easily distinguishable from all of the *sanctithomae* with which they were compared." He believed that this pale colour "is not an artifact of feather wear." I examined these birds as long ago as 1971; my notes taken at that time state "Supposed pallor of *legtersi* is due to type series being mostly worn and bleached." With the series now before me, this conclusion is verified. A fresh-plumaged topotype (CM 142191, 6.5 km S Felipe Carrillo Puerto, Q.R., 31 January 1965) matches specimens of *sanctithomae* taken at the tip (Tizimín, Yucatán) and base (Belize) of the peninsula. Furthermore, two badly worn June specimens from northwestern Honduras, just over the border from the type locality of *sanctithomae* (Santo Tomas, Guatemala; see Todd 1950, Monroe 1968), differ from three February and March specimens just as do the worn versus fresh specimens of *legtersi*. An April Honduras specimen is slightly paler than the February and March birds. Of the two worn Honduras specimens, one (CM 133402, 7 June) matches well the worn paratypes of *legtersi*, and the other (CM 134213, 28 June) is even paler than any specimen of *legtersi* seen. These comparisons indicate that the alleged characters of *legtersi* are indeed an artifact of wear and fading.

Paynter (1955) stated "Although Carrillo Puerto is the northernmost range of the species on the Peninsula, I have little doubt that in time it will be found in the rain forest of northern Quintana Roo." This prediction was fulfilled by the collection of two specimens (CM 142042, DMNH 34872) at "La Vega," 2.5 km W and 11 km S of Puerto Juarez, northeasternmost Quintana Roo [N.B. La Vega was described by Goldman (1951) as a village, visited by Nelson and Goldman in March 1901. It appears on no modern map except that of Paynter (1955), who undoubtedly copied the locality from the map in Goldman (1951). In January 1965, our collecting expedition came across "La Vega" by pure chance. We entered an old dirt road leading off the main road south of Puerto Juarez, and shortly came across a large elaborate gate, at the top of which was the inscription "La Vega"—it was clearly a substantial ranch, long abandoned, rather than a true village.] Marantz (1997) saw one of these two La Vega specimens (DMNH 34872), and stated that it "matched perfectly *D. sanctithomae* collected near Chetumal [southernmost Quintana Roo]." He went on to say that "this specimen, *if labelled correctly* [italics mine], indicates that even if *D. c. legtersi* is considered valid, its range must be restricted to the immediate vicinity of the type locality in the east-central portion of the peninsula"; he did not comment on the unlikelihood of such a distribution. As for the correctness of the label data, I can assure Marantz that they are accurate, as I was a member of the expedition that collected the two La Vega specimens!

Another range extension is documented by CM 142137 and CU 35084, collected on 27 January 1965 19 km N of Tizimín, Yucatán. This locality is well within the Deciduous Forest Zone, rather than the Rain Forest Zone, as mapped by Paynter (1955). Map 4 of Marantz (1997) purportedly shows the distribution of the Central American *Dendrocolaptes certhia* based on Peters (1951). Peters, however, did not indicate the extent of the species' range on the Yucatán Peninsula; it is obvious that it occurs much farther north and northeast than mapped by Marantz. The distribution map for *D. certhia* in Howell & Webb (1995) will likewise have to be adjusted somewhat. Another omission in the latter map is Pacific Chiapas; I have seen two specimens from 6 km E of Pijijiapan (DMNH 25114, 25115) taken 23 November 1964 and 26 November 1963 respectively. They are typical of *D. c. sanctithomae* and show no approach to *sheffleri* of Pacific Oaxaca and Guerrero. I have found no consistent differences among *sanctithomae* from Honduras north through Belize, the Yucatán Peninsula, and Chiapas to the limit of the species range in Veracruz.

Acknowledgements

The series of *Dendrocolaptes certhia* in CM was augmented by specimens borrowed from other museums, through the kindness of the respective Curators and Collection Managers: Cornell University, Delaware Museum of Natural History, Moore Laboratory of Occidental College, and Peabody Museum of Natural History of Yale University. I am grateful to Steve N. G. Howell for his comments on the manuscript.

Specimens examined

MEXICO: Veracruz 5, Oaxaca 4, Chiapas 6, Campeche 3, Yucatán 2, Quintana Roo, 9. BELIZE: 10. HONDURAS: 6.

N.B. In a preliminary version of this study made in the early 1970's I came to the same conclusions about the validity of "*legtersi*"; specimens examined at that time included the CM and YPM skins listed above, plus 8 more from Campeche (University of Michigan 6, U.S. National Museum 2) and 1 from Tabasco (Louisiana State University).

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Rediscovery of the Cape Verde Cane Warbler *Acrocephalus brevipennis* on São Nicolau in February 1998

by C. J. Hazevoet, L. R. Monteiro & N. Ratcliffe

Received 14 May 1998

The Cape Verde Cane Warbler *Acrocephalus brevipennis* is endemic to the Cape Verde Islands. It belongs to a clade of reed warblers distributed in the Afrotropics and on Atlantic and Indian Ocean islands (*cf.* Leisler *et al.* 1997). Historically, it has been known to occur on three of the 10 islands in the Cape Verde archipelago, viz. Santiago, Brava, and São Nicolau, the last being the type locality (*cf.* Hazevoet 1993, Hazevoet & Fischer 1996). During 1988–1993, the population on Santiago was estimated at *c.* 500 pairs but surveys on Brava and São Nicolau did not locate any (Hazevoet 1993, 1995). The last reports from the latter two islands were from 1969 and 1924, respectively, and it was therefore presumed to be extinct there (Cramp 1992, Hazevoet 1993, 1995, Snow & Perrins 1998). Numbers on Santiago also appear to have declined drastically as it was reported to be common (and sometimes even 'abundant') by 19th century authors (Keulemans 1866, Dohrn 1871, Alexander 1898). Prolonged droughts and subsequent habitat deterioration are thought to be the cause of its decline on Santiago and presumed extinction on Brava and São Nicolau (Hazevoet 1995). Recently, a previously unreported specimen, collected on São Nicolau in October 1970, was discovered in the collection of the Centro de Zoologia, Lisbon, and this provided a new impetus for a thorough search on that island (Hazevoet 1999). From 1–20 February 1998, we searched all potential habitat on São Nicolau for the presence of the Cape Verde Cane Warbler. Grid references in the following are those found on the *Carta Militar de Portugal, Província de Cabo Verde* (sheet 19; survey of 1971, published 1975).

The first Cane Warbler on São Nicolau was located during the early morning of 4 February, when the species' characteristic harsh calls, as well as a short burst of song, were heard at Ribeira do Chafariz (altitude 700 m; Grid Ref. 817, 408), above Canto da Fajã, where it was observed again on 14 and 16 February. On 8 February, Ribeira da Queimada was surveyed, this being where the 1970 specimen had been collected, but no Cane Warblers were found here. However, on the same date, four territories, each with a calling and singing male, were found at Ribeira Tucudo (400–600 m), a tributary to Ribeira da Queimada. Three of the four territories at Ribeira Tucudo were concentrated at the uppermost 250 m of the valley bottom (Grid Ref. 851, 405), with the fourth situated *c.* 400 m 'downstream' (Grid Ref. 854, 407). Another three territories were found at Ribeira da Fragata between 14 and 19 February, with two at an altitude of 520 m (Grid Ref. 804, 413) and one at 125 m (Grid Ref. 809, 425). The straight-line distance between the sites at Ribeira Tucudo, Ribeira do Chafariz and Ribeira da Fragata (site 1 and 2) is *c.* 3.5, 1.5 and 1 km respectively, although there are high mountain ridges in between them.

The habitat of the Cape Verde Cane Warbler on São Nicolau generally comprised small but dense stands of cane *Arundo donax* along a dry riverbed, which were often also associated with shrubbery and fruit trees. At Ribeira do Chafariz, the birds occupied a small (*c.* 50 m^2) patch of cane with only limited shrubbery. Habitat at Ribeira Tucudo also consisted of small but dense patches of cane but these were associated with extensive stands of mangos *Mangifera indica* and various other tree species, thus being quite similar to that of the Cane Warbler on Santiago (CJH pers. obs.). Similarly, Cane Warblers were found in patches of *A. donax* associated with stands of trees (mainly orange trees *Citrus* sp. and mangos) at Ribeira da Fragata. Searches of large patches of cane that are common on the hillsides around Fajã valley failed to locate any Cane Warblers, perhaps because the cane was dry and less dense with no trees or shrubs associated with it. Equally, valleys with fruit trees but little cane, such as Ribeira Brava and Ribeira Quiemada, did not have any Cane Warblers. The species has also been reported to use sugar-cane *Saccharum officinarum* (Keulemans 1866, Alexander 1898), but during this survey no birds were found in the small and sparse plantations on São Nicolau.

During our stay on São Nicolau, the large majority of the north-western part of the island, including most of the main ribeiras and their tributaries, was surveyed. The remaining southern and eastern parts of the island are extremely arid and no sustainable habitat for Cane Warblers is to be expected to exist there. While it is possible that there are a few more territories, we are convinced that we have located the majority of the Cane Warblers on the island. The population of the Cape Verde Cane Warbler on São Nicolau therefore totals approximately eight territories and so is to be considered critically endangered.

The Cape Verde Cane Warbler was reported to be 'not uncommon' on São Nicolau in 1865 (Keulemans 1866, Dohrn 1871) and 'fairly numerous' by Alexander (1898), who collected 13 specimens there at unspecified localities in 1897 (Hazevoet 1995). In 1924, three more specimens were collected at Ribeira Brava by the Blossom South Atlantic Expedition (Hazevoet 1995), but after that nothing was heard again of the species on São Nicolau until the discovery of the 1970 specimen in Lisbon and the eight territories documented here. The reason for this population decline is probably the loss of the Cane Warbler's habitat from most of the island as a consequence of desertification. Prolonged droughts have also caused successive crop failures in areas such as Ribeira Brava that were formerly reknowned for their production of coffee and various tropical fruits, such that today only subsistence agricultural activities remain possible.

In view of the prevailing climatological conditions, prospects for the survival of a viable population on São Nicolau appear to be bleak, although the ribeiras of the north-western part of the island are clearly still suitable for the growth of both cane and fruit trees, the mixture of which appears to be the species' preferred habitat. If local farmers could be encouraged to plant and maintain stands of *A. donax* among the fruit trees, the area of habitat available to the Cane Warbler could be increased substantially. This, in turn, could lead to an increase of the Cane Warbler's population size on São Nicolau. However, such policy will be difficult to implement because *A. donax* is widely used as a cheap and easily exploited food supply for cattle and other domestic stock by the rural population. A thorough survey of the island of Brava may perhaps reveal that a few Cane Warblers still survive there as well but, at present, the species' last relative stronghold is on the island of Santiago.

Acknowledgements

Our search for the Cape Verde Cane Warbler on São Nicolau was carried out during the Cape Verde *Pterodroma feae* survey, funded by the Royal Society for the Protection of Birds.

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BOOK RECEIVED

Feare, C. and Craig, A. 1998. *Starlings and Mynas*. Pp. 285; 32 colour plates by Barry Croucher, Chris Shields and Kamol Komolphalin; 4 text figures; 110 colour maps. Christopher Helm/A & C Black. ISBN 0-7136-3961-X. £32.00. 23 × 16 cm.

Starlings and Mynas is a handbook, with lip service paid to the publisher's determination to market it as an indentification guide. As a handbook of salient facts and life history characteristics it is extremely good, and so it should be, since its authors are research scientists with nearly 40 starling publications between them, including Feare's acclaimed *The Starling* (OUP, 1984). It reviews the biology of the 114 species in a comprehensive, readable and most interesting manner. There is a lengthy introductory essay on the family Sturnidae, and an up-to-the-minute, unstuffy and highly readable account of each species. The authors' information arises from their own research interests and field experiences, from friends and correspondents, the literature (there are well over 1100 references) and museum studies.

Feare and Craig use neither subfamilies nor superspecies; they employ 29 genera and go to considerable lengths to characterize each of them and to justify some unconventional species allocations. *Sturnus* and *Spreo* are each reduced to 4 species, for instance; the Brahminy Starling *pagodarum* is in its own genus *Temenuchus*, the Rose-coloured Starling *roseus* is back in *Pastor, Cinnyricinclus* is broken up and *Lamprotornis* reconstituted. Nearly all of the new taxonomy is plausible and most of it convincing.

The Common Starling *Sturnus vulgaris* lacks bright colours and bold patterns but makes up for it with vividly coloured social and sex lives. (We should really call this bird the *Vulgar* Starling.) Read all about it in The Sun—the Old World tropical sun, of course, for that is where the starlings are most numerous. Many starlings are co-operative breeders, some are highly colonial; many have resplendent plumage (the Flame-browed Starling *Enodes erythrophys* and many mynas, the Golden-breasted *Lamprotornis regius* and many other African glossy starlings); and many are oddballs, like the waterfall-nesting *Onychognathus tenuirostris*, the nomadic *Creatophora cinerea*, the roll-as-you-go foraging flocks of *Pastor roseus*, the parasitic oxpeckers, the Grosbeak Myna *Scissirostrum dubium*, the fruitstone-eating *Aplonis brunneicapilla*—and who knows what the Coleto *Sarcops calvus* gets up to? Marvellous birds indeed.

Given that some highly glossy, iridescent starlings are difficult to capture in paint, given also that the artists are unlikely to have experienced many starling genera in the field, the plates are mostly excellent, ranging down to merely admirable or very good. Unfortunately the reader has no means of knowing who painted which ones. That the same portrait appears twice in Plate 16, labelled *Sturnus cineraceus* (which it is) and *Creatophora cinerea* (which is isn't) is doubtless the publisher's error, not the artist's. Another publisher's mistake is opposite Plate 17, where *S. vulgaris* has two identical maps: the second surely in place of an intended world map to show where Common Starlings are introduced aliens (compare the two maps for the Common Myna *Acridotheres tristis* opposite Plate 12 where, incidentally, the world map can be read only with a powerful magnifying glass).

There is an oddity too concerning the rare Abbott's Starling *Pholia femoralis*: 'Sexes are alike. Juvenile. . .throat and chest are yellowish brown' (text p. 249), but Plate 25 shows the stripey juvenile with a dark brown chest, whilst in *The Birds of Africa* 6 we are claiming that the sexes differ and stripey brown birds are juveniles (brown eyes) or adult females (yellow eyes). There's a line missing on p. 183, a slightly misrepresented remark about nestling bill colour on p. 229, and a wrong egg dimension on p. 235. If less than half a dozen words are wrong it means that some 203864 are right, and that's why you should add this admirable monograph to your Great Bird Book collection. Armchair those *Aplonis*, then get out there to learn more about them before its too late.

C. H. Fry

NOTICE TO CONTRIBUTORS

Papers are invited from Club Members or non-members, especially on taxonomic and distributional topics; descriptions of new species are especially welcome and may be accompanied by colour photographs. **Two copies** of manuscripts, typed on one side of the paper, **double spaced and with wide margins**, should be sent to the Editor, Prof. Chris Feare, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK. All contributions, **including *In Brief* articles**, should follow the style of main papers in this issue of the *Bulletin*. Where appropriate, authors are invited to submit half-tone photographs to illustrate their papers.

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The 1999 List of Members, and addresses will again not be published with the *Bulletin* but copies are available, on application (with a remittance of **£2.00** to cover costs of production and postage), to the Hon. Secretary. Please advise the Hon. Secretary, without delay, of any address changes, or corrections, for despatch of the *Bulletin*.

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Correspondence on membership, changes of address and all other matters should be addressed to the Hon. Secretary, Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants GU31 5PA, UK. For details of Club Meetings see inside front cover.

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MEETINGS are held in the **Sherfield Building of Imperial College,** South Kensington, London, SW7. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from **6.15 pm,** and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about **8.00 pm.**

FORTHCOMING MEETINGS

Tuesday 6 July.—Jonathan Ekstrom will speak on *"Of the Noble Notou and Karismatic Kagu—the extraordinary birds of New Caledonia"*. His life-long fascination with the natural world began when he was very young, around the family home in Surrey. Whilst studying for his first degree in Natural Sciences at Cambridge, he became involved in biological survey projects in tropical countries, which included bird research in Tanzania and Indonesia. Later activities included research in India, working for BirdLife International, and some teaching on behavioural ecology in the Zoology Dept of Cambridge University. In 1998, Jon organised a research and conservation project in New Caledonia, in the SW Pacific, where a team from Cambridge, Paris and New Caledonia made surveys for birds and reptiles in many different forest sites. An ornithological highlight of this work was the re-discovery of the New Caledonian Owlet-Nightjar, not seen since the type specimen was collected in 1880. He is now studying for his PhD on the Vasa Parrots of Madagascar, based in Tim Birkhead's research group at Sheffield University.

*Applications to the Hon. Secretary by **22 June,** please.*

7 September.–Alex Randall MP, will speak on *"Bird Conservation matters, as viewed from Westminster"*. Alex (John) Randall had been a keen ornithologist from his earliest days. After graduating from London University with a degree in Serbo-Croat he was able to indulge his two passions of foreign travel and wildlife, while working in the family retail business. He became tour leader for Birdquest Ltd, and latterly Limosa Holidays, and is particularly interested in the countries of Eastern and Central Europe. He also helped pioneer new areas for bird tours, including Cuba. In July 1997, he was elected to Parliament as the MP for Uxbridge, becoming the first Conservative to win a by-election for over eight years. Among his parliamentary duties he is a member of the Environment Select Committee, where he hopes to be able to give wildlife conservation matters the attention they deserve.

*Applications to the Hon. Secretary by **24 August,** please.*

12 October.—Professor. S. E. Piper will speak on *"Long term studies of birds in southern Africa"*. Steven was born and raised in Durban, and trained initially as an engineer, but an interest in birds while at university led him through subsequent degrees in statistics (bird-ringing data analysis) and mathematics (demography of the Cape Griffon). He has been involved in studies of the Cape Griffon *Gyps coprotheres* and Long-tailed Wagtail *Motacilla clara* for over 20 years, and recently turned his hobby into his profession on joining the School of Botany and Zoology at the University of Natal.

*Applications to the Hon. Secretary by **28 September,** please.*

30 November.—Richard ffrench on *"Dickcissels in Trinidad"*. Born in 1929, Richard came into ornithology comparatively late, just before he left Oxford for a period of teaching. After a short spell in Barbados, he settled in Trinidad, staying for 27 years, during which he produced the first field guide for a neotropical country to include comprehensive information on life history, as well as idenitification. He studied Dickcissels for about eight years, before they suddenly abandoned their winter visits to Trinidad. Returning to Britain in 1985, Richard has maintained his special interest in birds of Trinidad and Tobago, which he visits regularly with birding tours.

*Applications to the Hon. Secretary by **16 November,** please.*

Advance notice of provisional meeting dates for the year 2000. Provisional plans are for eight meetings on the following Tuesdays: **18 January, 29 February, 4 April, 2 May** (AGM and social evening–with informal "mini-talks"), **4 July, 4 October, 31 October** and **28 November.**

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club on these dates, giving as much advance notice as possible—please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants GU31 5PA, UK (or **Email: mbcasement@aol.com**).

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 119 No. 2 Published 18 June 1999

CLUB NOTES

The eight hundred and eighty second meeting of the Club was held on Tuesday, 16 March 1999 at 6.15 pm. 29 Members and 19 guests attended.

Members present were: The Rev. T. W. Gladwin (*Chairman*), Miss H. Baker, Capt Sir Thomas Barlow Bt, DSC, RN, P. J. Belman, T. M. Brooks, D. R. Calder, Cdr M. B. Casement RN, Dr N. J. Collar, G. C. L. Dutson, S. J. Farnsworth, F. M. Gauntlett, A. Gibbs, D. Griffin, T. P. Inskipp, J. A. Jobling, R. H. Kettle, Dr F. R. Lambert, Dr J. F. Monk, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, M. L. Paling, Dr R. P. Prŷs-Jones, N. J. Redman, R. E. Scott, Dr R. C. Self, F. Steinheimer and C. W. R. Storey.

Guests attending were: Ms N. Seddon (*Speaker*), S. Buchart, Mrs J. B. Calder, Mrs C. R. Casement, C. Carter, Prof A. Craig, Dr D. Foskett, Mrs J. M. Gladwin, Dr G. Graves, Mrs S. Griffin, C. Hewson, Ms C. Hoff, J. C. Lowen, N. A. D. Mallari, Mrs M. Montier, P. J. Moore, Dr J. A. Tobias, B. Warren and Miss C. Wilder.

The Chairman invited all present to honour, with a minute's silence, the memory of Mr R. E. F. (Ronald) Peal, who had served the Club with distinction—*Committee 1969–71, 1993–97, Hon. Secretary 1971–89, Chairman 1989–93*—who had died on 8th March. The Service of Thanksgiving had taken place earlier that afternoon, and the funeral notice had read "no flowers, by request, but donations, if desired, should be sent to the British Ornithologists' Club".

After dinner, Nathalie Seddon gave a fascinating talk, illustrated with colour slides and sound recordings, on the "*Birds of Madagascar*". After an introduction to the biological uniqueness of Madagascar, and the high levels of endemism found in many animal groups, including birds, Nathalie described her study of the breeding and acoustic systems of one of Madagascar's most enigmatic, endemic species, Subdesert Mesites *Monias benschi*. Subdesert Mesites are globally threatened, inhabiting a c. 14,000 km^2 area of spiny forest in southwest Madagascar that is rapidly being degraded. They belong to a monotypic genus in an endemic Malagasy family (Mesitornithidae) of three species. The family is of uncertain taxonomic affinities, but may be allied to the rails. Subdesert Mesites are strongly sexually dimorphic, and females appear to be the behaviourally dominant and dispersing sex. The birds live in groups of 2–9 individuals and the sex ratio, both at the level of the population and within-groups, tends to be male-biased. The highly variable mating system includes monogamy, polygyny (1 male, 2 females) and co-operative polyandry (1–2 females, 3–6 males). In common with many other tropical bird species, males and females sing co-ordinated duets and choruses. Duetting has received some attention but chorusing remains poorly studied. Six non-mutually exclusive hypotheses for the function of chorusing are being tested in Nathalie's study of 80 colour-ringed birds. These can be grouped into those invoking co-operation between group members (territory defence, acoustic contact between group members and recognition of group members), and those invoking conflict (mate guarding, mate choice and/or the establishment and maintenance of a dominance hierarchy).

In favour of a territorial function are the observations that border disputes between neighbouring groups of mesites incorporated choruses, and that singing by one group often stimulated chorusing in a neighbouring group. Furthermore, playback experiments suggested that mesites may use choruses of intruder groups to assess the number of individuals (and hence the degree of threat) in the chorusing group. Against this idea were the absence of a dawn peak in chorusing, the observation that the majority of choruses were given away from the territory boundaries, and the sex-specificity of responses to playback. In general, co-operation seems unlikely, given the relative complexity of the chorus, the inter-group variation in chorus structure, and the observation that only subset of the group sings.

The relative complexity and cost of the display suggest that conflicts within and/or between the sexes have played a key role in their design, as is the case for other complex and costly displays such as elaborate plumage. At this stage it is not possible to distinguish between the three main hypotheses invoking conflict, and all may be applicable. However, there is some observational and experimental evidence suggesting that mate-guarding may be an important function, i.e. that females sing to attract males in order to deter rivals; males may respond to female calls to produce a duet (or a chorus where there is more than one male in group). The evidence includes the observation that females initiate most natural vocal events, that males use their calls to deter rivals of the same sex, that female calls appear to attract males, but male calls do not appear to attract females, and that groups respond less to male–female duets than to lone calls and male–male duets.

It was concluded that choruses are complex signals, and that it is very unlikely that there is one function only. Considerably more work, including data analysis and further field experiments during a third field season later this year, is needed before any firm conclusions can be drawn.

Registered Charity No. 279583

TRUSTEES ANNUAL REPORT FOR 1998

List of Trustees – Committee

Reverend T. W. GLADWIN *Chairman* (1997); Mrs A. M. MOORE *Vice-Chairman* (1997); Cdr. M. B. CASEMENT, O.B.E., R.N. *Hon. Secretary* (1996:); D. J. MONTIER *Hon. Treasurer* (1997); Dr R. P. PRŶS-JONES *Chairman Publications Sub-Committee* (1995); N. H. F. STONE *Club Archivist* (1995); D. GRIFFIN, M.A. (1997); N. J. REDMAN (1997); R. E. SCOTT (1998).

Objects of the Charity. To promote scientific discussion and facilitate the publication of scientific information connected with ornithology.

Activities and Review of the Year

Meetings. Eight evening meetings were held in 1998, in the Sherfield Building at Imperial College, London. A total of 315 (224 members and 91 guests) attended these meetings, which represented an average attendance of 39. The programme of speakers during the year again covered a wide variety of ornithological subjects in both Britain and overseas. As last year, the May meeting following the AGM was in the form of a social evening, during which informal short talks and brief discussions were contributed by seven participants, on a range of topical subjects.

Committee. The Committee met six times during the year, and the attendance was 96%. The chief topics for discussions concerned the progress of club publications, and the activities of the Publications Sub-Committee (see below). Following the announcement by Imperial College of an additional surcharge (of £2 per head) for meals after 6.00 p.m., dinner charges were increased to £15, with effect from the March meeting. The administration and re-organization of membership records and subscription payments was progressed by the Hon.

Secretary, with the assistance of Miss Helen Baker, as Membership Secretary.

Also discussed were various ideas for modernizing the appearance and increasing the circulation of the *Bulletin,* with the hope of introducing possible changes in the year 2000.

Mr Peter Oliver, representing the Trustees of the Herbert Stevens Trust Fund, met with the Committee to give advice on the performance of the Fund. The Committee is most grateful to Mr Nigel Crocker, Mr Richard Price and Mr Peter Oliver for their time and expertise in this matter.

Publications Sub-committee. Following the two volumes produced in 1997, no new titles in the *Occasional Publications* series appeared in 1998. However, editing is well advanced for a publication on *Type Specimens of Birds in the University Museum of Zoology, Cambridge,* which is planned to appear by the middle of 1999. This should be followed during 2000 by a volume of proceedings arising from the BOU/BOC/NHM/BirdLife Conference on *Why Museums Matter: Avian Archives in an Age of Extinction* and its associated Workshop on *Increased Co-operation between Bird Collections, especially in Europe,* to be held in November 1999 (see *Ibis* 140: 723, 1998 and *Bull. Brit. Orn. Cl.* 118:135–136, 1998). Later during 2000, it is planned that the *Bird Atlas of Uganda,* being produced as a joint project with the BOU, will be ready in time for the Pan-African Ornithological Congress which will take place in Uganda, in September of that year.

Proposals for a further two volumes in the *Occasional Publications* series are under active consideration, and it is hoped that titles will continue to appear on a roughly annual basis. In May 1998, Dr Robert Prŷs-Jones took over Chairmanship of the Publications Sub-Committee from Mrs Amberley Moore, whose great labours on its behalf will be a hard act to follow.

Membership. There were 568 paid-up Members at 31 December 1998–320 with addresses in the U.K., and 248 overseas. Active recruitment from the newly-elected Members of the Union continued, resulting in 29 new Members and one rejoining the Club during the year.

The Committee decided in 1997 that, in the interests of economy, the annual publication of a Members' Address List, with the Index, would be discontinued. The address list will be published at four yearly intervals, though the Hon. Secretary will prepare a list annually, and duplicated copies will be available for any Member requesting a copy, on payment of £2.00 to cover the costs of production and postage.

It is with great regret that the Committee reports the deaths in the past year of six Club Members' J. G. Williams (1951–97), Mrs E. T. Thomas (1979–98), B. J. Wheeler-Holohan (1987–97), P. A. Prince (1981–98), J. H. Elgood (1963–98) (*Committee 1967–1970, 1986–1988, Vice-Chairman 1971–1974, 1989–90, Chairman 1974–1977*), and Professor D. F. Parmalee (1994–98). There were also six resignations, three lost touch, and 13 were removed under Rule 7.

The *Bulletin*. The 264 pages of Volume 118 contained 25 main papers and 17 shorter articles. Three new species were described, a rail and two owls, all from Indonesia and each illustrated by colour plates. The Editor is grateful to our sponsors for funding the production of colour plates. In addition, a new subspecies of honeybuzzard was described from the Philippines. Papers on taxonomic and distributional topics came from all continents. During 1998, 60 manuscripts were received, and 42 of these have been accepted.

Descriptions of new species are given priority and the interval between receipt of the manuscript and publication of these papers has been 2–4 months; both authors and publishers have worked hard to achieve this. For other papers, the interval between dates of receipt and publication of main papers has ranged from 11 to 21 months, averaging 14 months, while shorter contributions have appeared more quickly, the respective figures being 8 to 13 months, averaging 11. As in the past, Mary Muller has compiled the index (a gargantuan task), Effie Warr has distributed the free allocation of offprints and provided other assistance, and Michael Casement has prepared the Club Notes. In addition to thanking these contributors, the Editor is particularly grateful to the many people who have reviewed manuscripts, thereby helping to ensure the quality of papers that are published in the *Bulletin*.

***Bulletin* Sales.** Sales to non-member subscribers totalled 146, comprising 18 in the UK and 128 overseas (28 countries). Of the latter, 49 were to the United States of America, and 15 to Germany; additionally, 8 free copies to UK addresses (including 5 to meet legal requirements) and 5 overseas.

Finance. Though sales of back numbers of the *Bulletin* and other publications fell by almost £1,500 compared with 1997, total income for 1998 was only slightly down, at £33,118. On the other hand, expenses for the year, totalling £23,459, were down by over £7,000 because no new publications were completed, compared with two in the previous year. A further contribution of £500 was made to the Bird Atlas of Uganda project and *Bulletin* 117 (2), the Avian Taxonomy Conference number, had to be reprinted as stocks ran out. Savings achieved through not publishing the list of members helped to offset the costs of additional colour plates in the *Bulletin,* and administration expenses for the year turned out lower. The end result for 1998 was a surplus of income over expenditure of £9,069 from Unrestricted Funds, from which it is proposed to set aside £3,000 in a designated fund towards the cost of a new publication due to appear in 1999.

The Club's investments showed an increase in market value over the year of £13,610, almost entirely attributable to the three charity unit trust holdings comprising the Herbert Stevens fund, which by 31st December had a market value of £215,346 out of the Club's total assets of £281,442.

Trustees' responsibilities

Under the Charities Act 1993, the trustees are required to prepare a statement of accounts for each financial year which give a true and fair view of the state of affairs of the charity at the end of the financial year and of the incoming resources and application of resources in the year. In preparing the statement the trustees are required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable accounting standards and statements of recommended practice have been followed, subject to any material departures disclosed and explained in the statement of accounts.
- prepare the financial accounts on the going concern basis unless it is inappropriate to presume that the charity will continue its operations.

The trustees are responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the charity and to enable them to ensure that any statement of account prepared by them complies with the regulations under section 41(1) of the Charities Act 1993. They are also responsible for safeguarding the assets of the trust and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

BRITISH ORNITHOLOGISTS' CLUB

Registered Charity No. 279583

Balance Sheet as at 31 December 1998

		1998		1997	
	Notes	£	£	£	£
Tangible Fixed Assets	2		30		40
Investments					
At market value	3		216,488		202,878
Current Assets					
Stock of publications		100		100	
Cash at bank and in hand		2,825		5,099	
Cash on deposit		71,245		56,536	
Prepayments		480		480	
Other debtors		—		2,462	
		74,650		64,677	
Current Liabilities					
Subscriptions in advance		(5,730)		(5,437)	
Creditors falling due within one year		(3,996)		(3,985)	
			64,924		55,255
TOTAL ASSETS			£281,442		£258,173
Funds					
UNRESTRICTED					
Designated	4		3,000		—
Other	5		270,802		251,123
			273,802		251,123
RESTRICTED	6		7,640		7,050
			£281,442		£258,173

Approved and signed on behalf of the Trustees
T. W. GLADWIN
Chairman
4 May 1999

Statement of Financial Activities – Year Ended 31 December 1998

	Notes	Unrestricted Funds 1998 £	Restricted Funds 1998 £	Total 1998 £	Total 1997 £
INCOME					
Subscriptions					
Members		6,591	—	6,591	6,559
Non-member subscribers		3,337	—	3,337	3,135
Income tax recoverable under Deeds of Covenant		396	—	396	328
		10,324	—	10,324	10,022
Donations		63	78	141	215
Investment Income					
Herbert Stevens Trust Fund		10,422	—	10,422	10,167
Income tax recovered in respect of prior year		—	—	—	1,426
		10,422	—	10,422	11,593
Barrington Trust Fund COIF Income Shares		39	—	39	39
Interest received		4,175	512	4,687	3,807
		14,636	512	15,148	15,439
Sales of Publications					
Bulletin		656	—	656	1,179
Other publications		2,062	—	2,062	3,010
		2,718	—	2,718	4,189
Meetings		4,642	—	4,642	3,726
Other Income					
Club ties and brooches		143	—	143	107
Miscellaneous		2	—	2	—
TOTAL INCOME		32,528	590	33,118	33,698
EXPENDITURE					
Direct Charitable Expenditure					
Meetings					
Room hire, speakers' expenses, etc		1,195	—	1,195	1,226
BOC Bulletin					
Production, printing and distribution		14,646	—	14,646	14,877
Other publications					
Bulletin 117(2)—Avian Taxonomy conference issue reprinted		634	—	634	—
Other publications – production and publication		—	—	—	7,904
Future publications		500	—	500	500
Publicity, postage and packing		140	—	140	358
Other expenditure					
Meetings					
Restaurant		4,521	—	4,521	3,519
Administration	7	1,823	—	1,823	2,345
TOTAL EXPENDITURE		23,459	—	23,459	30,729
EXCESS OF INCOME OVER EXPENDITURE		9,069	590	9,659	2,969
Appreciation in value of investments		13,610	—	13,610	29,432
		22,679	590	23,269	32,401
TOTAL FUNDS brought forward at 1 January 1998		251,123	7,050	258,173	225,772
TOTAL FUNDS at 31 December 1998		£273,802	£7,640	£281,442	£258,173

Notes to the Accounts – Year Ended 31 December 1998

1. ACCOUNTING POLICIES

(a) Basis of Accounts

The financial statements are prepared under the historical cost convention, as modified by the inclusion of investments in the Herbert Stevens and Barrington Trust Funds at market values.

(b) Depreciation

Depreciation is calculated to write off fixed assets over their expected useful lives at an annual rate of 10% on cost.

(c) Publications

The cost of publications is written off in the Statement of Financial Activities as incurred except for a nominal stock value of £100 carried in the Balance Sheet.

2. TANGIBLE FIXED ASSETS

	Projection equipment £
Cost at 1 January and 31 December 1998	100
Accumulated depreciation at 1 January 1998	60
Charge for the year	10
At 31 December 1998	70
Net book value at 31 December 1998	£30
Net book value at 31 December 1997	£40

3. INVESTMENTS—at market value

	1998 £	1997 £
Herbert Stevens Trust Fund	215,346	201,854
Barrington Trust Fund	1,142	1,024
	£216,488	£202,878

4. UNRESTRICTED DESIGNATED FUND

	1998 £	1997 £
Future Publications – Designated during the year	3,000	—

5. OTHER UNRESTRICTED FUNDS

	General Fund £	Herbert Stevens Trust Fund £	Barrington Trust Fund £	Total £
Balances at 1 January 1998	48,245	201,854	1,024	251,123
Appreciation in value of investments during year	—	13,492	118	13,610
Surplus of income over expenditure	9,069	—	—	9,069
Transfer to Unrestricted Designated Fund.	(3,000)	—	—	(3,000)
	£54,314	£215,346	£1,142	£270,802

6. RESTRICTED FUNDS

	Publications Fund £	Bird Atlas of Uganda fund £	Total £
Balances at 1 January 1998	4,285	2,765	7,050
Donations	78	—	78
Interest—gross	311	201	512
Balances at 31 December 1998	£4,674	£2,966	£7,640

7. ADMINISTRATION EXPENSES include:

	1998 £	1997 £
Audit and Independent examination fees	550	550
Depreciation of tangible fixed assets	10	10

8. REIMBURSEMENT OF EXPENSES

Committee members are reimbursed for expenses incurred by them on behalf of the Club. The amount reimbursed during the year was £808 (1997 £1,271).

INDEPENDENT EXAMINERS REPORT TO THE TRUSTEES OF THE BRITISH ORNITHOLOGISTS' CLUB

This is a report in respect of an examination carried out on the accounts set out on pages 77–79 under Section 43 of the Charities Act 1993 and in accordance with directions given by the Charity Commissioners under Sub-section 7(b) of that Section.

RESPECTIVE RESPONSIBILITIES OF TRUSTEES AND INDEPENDENT EXAMINERS

As described on page 77 the Trustees are responsible for the preparation of the accounts and they consider that Charities Act 1993 Section 43(2) (audit requirement) does not apply. It is our responsibility to carry out procedures designed to enable us to report our opinion.

BASIS OF OPINION

This report is in respect of an examination carried out under section 43 of the Charities Act 1993 and in accordance with the directions given by the Charity Commissioners under section 43(7)(b). An examination includes a review of the accounting records kept by the charity trustees and a comparison of the accounts presented with those records. It also includes a review of the accounts and making such enquiries as are necessary for the purposes of this report. The procedures undertaken do not constitute an audit.

OPINION

No matter has come to our attention in connection with our examination which gives us reasonable cause not to believe that in any material respect:

(i) accounting records have been kept in accordance with Section 41 of the Charities Act 1993; or
(ii) the accounts accord with those records; or
(iii) the statement of accounts complies with the accounting requirements of the Charities Act 1993.

No matter has come to our attention in connection with our examination to which, in our opinion, attention should be drawn to enable a proper understanding of these accounts.

PORRITT RAINEY & CO.
Registered Auditors
Chartered Accountants

Sevonoaks
Kent
TN13 1XR
4 May 1999

Geographic variation and taxonomy of the Cave Swallow (*Petrochelidon fulva*) complex, with the description of a new subspecies from Puerto Rico

by Orlando H. Garrido, A. Townsend Peterson & Oliver Komar

Received 9 July 1997

The Cave Swallow *Petrochelidon fulva* complex is distributed locally from the southwestern United States and the Caribbean to northwestern South America (AOU 1983). The taxonomy of the group has been unstable throughout its history: although five forms were originally described as distinct species (Peters 1960), several recent reviews of the complex treated all forms as constituting one highly polytypic species (Peters 1960, Sibley & Monroe 1990). Recent treatments have varied in conclusions regarding species limits in the group: Phillips (1986) and AOU (1983) treated all of the North American and Caribbean forms within one polytypic species; Ridgely & Tudor (1989) treated the South American forms as a separate species (followed by AOU 1997); and Smith *et al.* (1988) suggested specific status for the continental forms vs those of the Caribbean (including Yucatan).

Even more unstable than species limits in the group has been the taxonomy at the level of subspecies. The populations of the Caribbean and Yucatan Peninsula differ among localities, yet much of this differentiation has been obscured by the treatment of all Caribbean forms as part of the nominate subspecies (Peters 1960), as if no geographic variation existed. Nevertheless, as numerous authors have pointed out (e.g. Ridgway 1904, Wetmore 1916, Phillips 1986), significant variation does exist among island populations, making the use of subspecific epithets desirable. Here we address in particular the distinctiveness of the population of Puerto Rico, which Wetmore (1916) considered part of the Jamaican population. Our studies, however, confirm its distinctiveness; hence, the purpose of this paper is to address geographic variation, species limits, and subspecific differentiation in the Cave Swallow complex.

Methods

Specimens (*N*=144: 51 males, 56 females, 7 unsexed) of Cave Swallows were gathered for study from the collections of the Delaware Museum of Natural History, Florida Museum of Natural History, Louisiana State University Museum of Natural Science, U.S. National Museum of Natural History, University of Kansas Natural History Museum, and the University of Michigan Museum of Zoology; additional specimens were examined and measured at Royal Ontario Museum, Museum of Comparative Zoology, American Museum of Natural History, Carnegie Museum of Natural History, Academy of Natural Sciences (Philadelphia), Museo Nacional de Historia Natural (Havana, Cuba), Museo "Felipe Poey" of the Universidad de la Habana, and Institute of Jamaica. Each individual was measured for bill length from the anterior edge of the nostril and (for some individuals) exposed culmen, tarsus length (to lowest undivided scute), wing length, tail length, and depth of tail fork (difference in length between longest and shortest rectrices).

Geographic variation in patterns of colouration of different populations was evaluated by direct comparison of each sex. All characters mentioned as geographically variable in the scientific literature were considered and evaluated. Additional information from fieldwork ongoing by Garrido and others (unpubl. data) regarding variation in mass and nest structure was also considered. For statistical analysis, specimens were grouped into 10 population samples: (1) Texas, (2) northern Mexico, (3) Chiapas, (4) Yucatan Peninsula, (5) Jamaica, (6) Puerto Rico, (7) Hispaniola, (8) Cuba, (9) Peru, and (10) Ecuador.

Geographic variation

Populations of the Cave Swallow complex breed in several regions scattered through the Americas: central and southern Texas and New Mexico, northern Mexico, interior Chiapas, the Yucatan Peninsula, northwestern South America, and in the Greater Antilles on the islands of Cuba, Isle of Pines, Hispaniola, Jamaica, and Puerto Rico. Although Texas and northern Mexican populations migrate to winter on the Pacific coastal plain of Central America (Komar 1997), Caribbean and South American populations are generally sedentary, apart from Cuban populations, most of which migrate to unknown destinations (A. Llanes, pers. comm.).

Morphometrics

Character variation based on the relatively small samples available showed no striking deviations from a normal distribution; however,

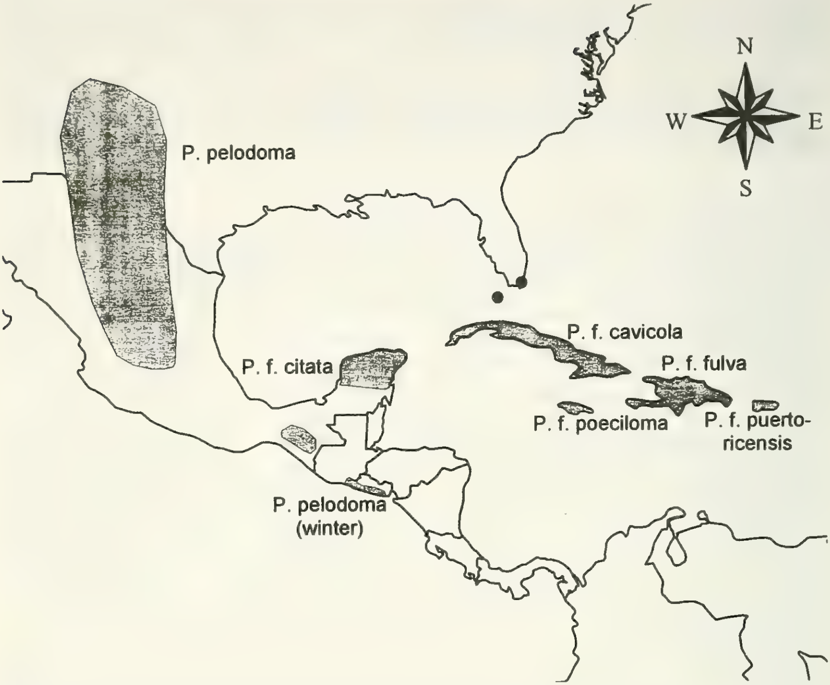

Figure 1. Map showing the distribution of Mesoamerican and Caribbean populations belonging to the Cave Swallow complex. Dots indicate recently colonized areas of Florida, probably representing populations of the Cuban subspecies, *P. f. cavicola*.

because some tests of normality indicated significant deviations, we used nonparametric statistics throughout the limited analyses. Tests (Mann–Whitney U) of sexual dimorphism in the largest samples available showed near-significant differences in the populations of the Yucatan Peninsula (10 males vs 7 females, $0.05 > P > 0.10$), although not in those of Cuba (8 males vs 5 females, $P \geqslant 0.05$). Workers with ample experience with Cuban populations are able to separate sexes reliably (A. Llanes and A. Kirkconnell, pers. comm.), indicating that sexual dimorphism is not negligible; for this reason, we analysed sexes separately throughout.

Geographic variation was striking in essentially all population comparisons (Figure 2). In all three characters tested statistically, interpopulation differences were significantly greater than expected at random ($P < 0.05$, Kruskal–Wallis test). Populations from Texas and northern Mexico had long wings and tails, whereas the populations of the Greater Antilles were especially short in both characters (Figure 2). Populations from Texas and northern Mexico were fairly clearly separable on the basis of bivariate plots of wing vs tail lengths.

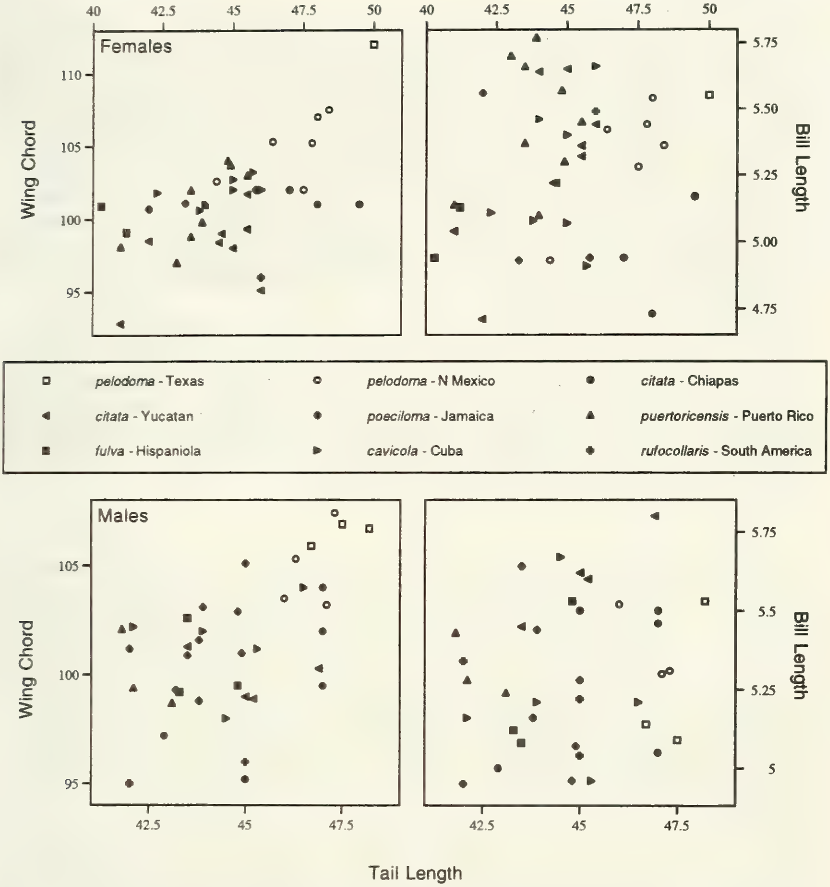

Figure 2. Bivariate plots showing aspects of morphometric variation among populations of the Cave Swallow complex. Actual sample sizes are larger than those shown because numerous points are hidden behind others with identical measurements.

Mass

Mass data available, although limited for some populations and not controlled for confounding factors such as fat levels, suggested differences among populations. The largest individuals in body mass were those of Texas and northern Mexico, whereas Caribbean and southern Mexican populations averaged smaller. Among the latter forms, Cuban individuals were generally larger, and those of Jamaica and Puerto Rico averaged much smaller. Hispaniolan birds were not possible to assess because only one individual had been weighed. The South American populations averaged relatively small in body mass, comparable to the smaller Caribbean populations.

Plumage characters

Geographic variation in plumage characters showed clear differences among populations (Table 1). Populations of Texas and northern Mexico were overall light in ventral colouration, in contrast with the Antillean populations, which tended to be more strongly coloured cinnamon or chestnut. Martin *et al.* (1986) documented that juveniles of the Texas populations have significantly higher frequencies of white feathering in the face and throat than individuals of the Yucatan populations. Selander & Baker (1957) noted a higher frequency of black feathers on the throats of Texas individuals, a characteristic they hypothesized resulted from occasional hybridization with Cliff Swallows *P. pyrrhonota*.

The populations of the Antilles also vary in the extent and intensity of the cinnamon or chestnut colouration on the forehead, nape, rump, breast, and flanks, with those of Puerto Rico being the overall most intensely coloured, and those of Cuba and Hispaniola are the least. The populations of northwestern South America contrast strikingly in having the chestnut forehead patch reduced, and a white or beige throat that contrasts with the chestnut breast band.

Nest structure

Differences in nest structure have played an important role in taxonomic decisions in the Cave Swallow complex (e.g. Smith & Robertson 1988). Nest type variation in the group can be distilled into four distinct nest structures: (1) a balcony structure, like a crescent-shaped half-saucer; (2) a half-cup attached to a vertical surface; (3) an enclosed structure with entrance near the apex; and (4) a globular structure with a side entrance (unusual). Texas Cave Swallows typically construct nests that are open cups (type 2; Selander & Baker 1957, Martin *et al.* 1977, Martin 1981). Yucatan and Chiapas populations are also apparently of type 2 (Álvarez del Toro 1980, Allan Phillips pers. comm.). Cuban populations generally construct nests of the balcony type (type 1), seated on horizontal surfaces or in cracks and crevices in cave walls (Gundlach 1876, Garrido pers. obs.). Hispaniolan nests invariably adhere to walls, in the form of a half-cup (type 2; Stockton de Dodd 1978), although some were enclosed with a side entrance (type 4; Wetmore & Swales 1931). Jamaican nests apparently are generally of type 2, adhering to vertical or slanted surfaces (Gosse 1847, Garrido pers. obs.). Puerto Rican populations apparently are generally of the balcony type (type 1), with a few of types 3 or 4 in man-made situations (Wetmore 1916). South American populations construct nests that are globular, with side entrances, often elongated into a bottleneck entrance (T. A. Parker III in Ridgely & Tudor 1989).

Although the open-type nest structure is often cited as a species character for the Cave Swallow complex, a great variety of nest structures is actually found in the group. Populations often show two or more nest types, including enclosed nests, usually considered diagnostic of Cliff Swallow nests. Given that some Cliff Swallow populations nesting in more sheltered sites often do not complete the globular nest (pers. obs.), we suggest that nest structure in this group

TABLE 1
Summary of plumage characteristics of populations of the Cave Swallow complex

Character	Cuba	Hispaniola	Jamaica	Puerto Rico	Yucatan	Texas	S. America
White on belly	Extensive	Extensive	Reduced	Restricted	Extensive	Extensive	Reduced to below breastband
Reddish on breast	Dull, reduced	Dull, reduced	Reddish, more extensive	Dark, extensive	Lighter, reduced	Very light, reduced	Dark breastband
Dorsum	Lustrous blue	Darker	Lustrous blue	Tinged grey	Lustrous blue	No lustre—dull brown or blackish	Lustrous blue or violet
White on dorsum	Wide	Thinner	Less profuse	Sparse	Profuse on upper back	Sparse	Streaks thin and sparse
Rump	Chestnut	Chestnut	Chestnut	Deep chestnut	Light chestnut	Light cinnamon or tan	Cinnamon
Iridescence on crown	Deep blue	Blue	Blue, lightly tinged green	Blue tinged green	Blue tinged green	Blue	Blue tinged violet
Forehead	Chestnut	Chestnut	Light chestnut	Chestnut	Cinnamon	Chestnut	Dark chestnut reduced
Secondary edging	Conspicuous whitish	Less marked whitish	Conspicuous whitish	Conspicuous beige	Conspicuous whitish grey	Conspicuous whitish, greyish, and beige	Beige
Undertail coverts	Washed rusty, no colour in juveniles	Like Cuban juveniles	Light rusty	Heavy wash of rusty	Light tan	Pale tan	Light beige

may often reflect nest microhabitat rather than a distinctive nest type for each species. Nevertheless, the above summary indicates that North American and Caribbean members of the Cave Swallow complex generally construct the open-cup type nest, in contrast to the globular structure most commonly constructed by Cliff Swallows.

Species limits and subspecific taxonomy

We take as a working definition of species that of the biological species concept, which sets as a criterion the actual or possible exchange of genes among natural populations. Considering the differences in plumage colouration (Table 1), morphometric characters (Figure 2), and migratory behaviour, we believe it unlikely that the populations of Texas and northern Mexico would interbreed with those of the Greater Antilles if the opportunity were to exist. Comparing the level of differentiation among these two forms with species-level breaks in other swallow taxa (e.g. *Stelgidopteryx serripennis* and *S. ruficollis*), species status is warranted. Even more striking are the differences between the northern populations and those of South America, which are so strong as to surprise us that they were ever considered conspecific (e.g. Peters 1960). Hence, we suggest the following changes to the taxonomy of the *Petrochelidon fulva* complex:

(1) Three allopatric groups of populations are best considered distinct biological species: *P. pelodoma* (see Brooke 1974 for use of *pelodoma* rather than *pallida*) of Texas and New Mexico south through northeastern Mexico; *P. fulva* of the Greater Antilles, the Yucatan Peninsula, and Chiapas; and *P. rufocollaris* of northwestern South America (Ridgely & Tudor 1989, AOU 1997). We propose the following English names for these three species: Cave Swallow, Fulvous Swallow (after Vieillot's original French name "Hirondelle fauve"), and Chestnut-collared Swallow, respectively.

(2) The populations of the Greater Antilles, often considered as not differing geographically, show geographic variation among island populations, breaking down into four geographic subsets recognizable as subspecies, including *P. f. fulva* of Hispaniola, *P. f. cavicola* of Cuba and the Isle of Pines, *P. f. poeciloma* of Jamaica, and an undescribed population on Puerto Rico. Differences between the two described races of the South American populations were supported by the limited series available to us, so we suggest that these two subspecies *P. r. rufocollaris* and *P. f. aequatorialis* be maintained as valid.

All three of the biological species recognized herein qualify as valid, diagnosable, and presumably monophyletic taxa that could be recognized as phylogenetic species (Zink and McKitrick 1995); several of the populations included (e.g. that of Puerto Rico) may also merit recognition as phylogenetic species as well.

A summary of the taxonomy, distribution, and distinguishing characters for each population in the Cave Swallow complex follows, including the description of one population previously not recognized as distinct.

Petrochelidon pelodoma (Brooke 1974)

Distribution. Central Texas and southern New Mexico south into northern Mexico, south to Coahuila, San Luis Potosí, and Tamaulipas. Apparently extended its distribution northward from Mexico into Texas in the past century (Selander & Baker 1957), with expansion continuing to the present (West 1995). Not recorded on migration in Chiapas (*contra* Peters 1960, refer to *P. f. citata*), but winters along the Pacific coastal plain of El Salvador (Komar 1997).

Diagnosis. Larger generally, with wings and tail especially long in relation to body size. Body mass 5.4–6.4 g greater than birds of Yucatan populations (West 1995). Throat and crissum lighter, approaching beige or light cinnamon, instead of dark cinnamon or chestnut. Rump, collar, and forehead all relatively lighter cinnamon.

Synonyms. Petrochelidon fulva pallida Nelson 1902 (see Brooke 1974 for use of the name *pelodoma*).

Petrochelidon fulva citata Van Tyne 1938

Distribution. Resident in northern portion of the Yucatan Peninsula and interior valley of Chiapas.

Diagnosis. Compared to *P. pelodoma*, smaller in wing, tail, and bill; brown more extensive and intense on breast and throat; white of belly more restricted; and rump darker (Van Tyne 1938). Compared with other populations of *P. fulva*, lightest in general colouration, especially in the chestnut of forehead and rump. Populations of interior Chiapas may be lighter in cinnamon of breast and throat, but differences are on average only, described by Miller *et al.* (1957) as intermediate toward *P. pelodoma*; early doubts as to the existence of a resident population in this region were unfounded (Amadon & Eckelberry 1955).

Petrochelidon fulva fulva (Vieillot 1807)

Distribution. Hispaniola and Gonave islands only. Resident.

Diagnosis. Closely similar to *P. f. cavicola*, with lustrous blue of back darker, thinner white streaking on back (though more than individuals of *P. f. poeciloma* and from Puerto Rico). Crown darker than individuals of *P. f. poeciloma* and from Puerto Rico, but somewhat lighter than *P. f. cavicola*; forehead darker than individuals of *P. f. poeciloma* and from Puerto Rico, but similar to *P. f. cavicola*. Secondary edgings less conspicuous than other populations of *P. fulva*. Undertail coverts rather devoid of reddish colour, resembling juveniles of *P. f. cavicola*, and contrasting sharply with individuals from Puerto Rico.

Petrochelidon fulva cavicola Barbour & Brooks 1917

Distribution. Cuba and Isle of Pines only. Apparently partly migratory, but winter distribution unknown (Barbour 1923; Garrido unpubl. data).

Diagnosis. Closely similar to *P. f. fulva*, distinguished easily from individuals of *P. f. poeciloma* and populations of Puerto Rico by dark and more lustrous crown with bluish (not greenish) tinge, by the darker forehead, by the secondary edging more whitish, and by the undertail coverts that are creamy beige washed with rusty, rather than strongly coloured rusty. Differs from *P. f. fulva* in the deeper blue iridescence in crown, and by the wider white streaks in the back.

Synonyms. *Hirundo coronata* Lambeye 1850 (not of Tickell 1833; see Peters 1960 for use of *cavicola*).

Petrochelidon fulva poeciloma (Gosse 1847)

Distribution. Jamaica only. Apparently nonmigratory (Gosse 1847).

Diagnosis. White of belly more restricted, and cinnamon more extensive, than *P. f. fulva* and *P. f. cavicola*, but not as much as individuals from Puerto Rico. Back closely similar to *P. f. cavicola*, but with less white; more lustrous than individuals from Puerto Rico. Crown less lustrous black than *P. f. fulva* and *P. f. cavicola*, but more lustrous than individuals from Puerto Rico, and with only a slight tinge of greenish. Forehead lighter than *P. f. fulva* and *P. f. cavicola*, and similar to individuals from Puerto Rico. Undertail coverts less rusty than individuals from Puerto Rico, though rustier than in *P. f. fulva* and *P. f. cavicola*.

Synonyms. *Hirundo melanogaster* Denny 1847 (not of Swainson; see Ridgway 1904).

Petrochelidon fulva puertoricensis subsp. nov.

Holotype. (LSUMZ 143050). Female; 5.5 miles NE Utuado, Puerto Rico; collected 30 August 1962 by D. C. Leber.

Paratypes (all from Puerto Rico) 5.5 miles NE Utuado; six collected 30 August 1962 (LSUMZ 143049–143054). 1.7 miles SW Ensenada; two collected 24 August 1962 (LSUMZ 143047 and 143048). 3 km E Consumo; one collected 5 March 1942 (LSUMZ 23193). Lares; three collected 20 June 1912 (USNM 238965, 238967, 238968). Mayaguez; one collected 6 October 1900 (UMMZ 94912). Aguadilla; two collected 10 June 1912 (USNM 238973, 238977). Quebradilla; one collected 3 July 1912 (USNM 238959). Boquerón; one collected 25 September 1937 (USNM 355169).

Diagnosis. Compared to other *P. fulva* populations, undertail coverts heavily washed with rusty colour, and breast, flanks, and sides more deeply coloured chestnut, with white of belly less extensive. Rump slightly darker chestnut. Back less lustrous blue, with a greyish tinge, and black crown more tinged with greenish.

Description of the holotype. Forehead deep chestnut, reaching almost to interocular, there beginning glossy black with bluish-green iridescence. Brick–cinnamon collar (lighter than forehead) crosses nape just caudal to black cap; cheeks of similar colour, but throat slightly lighter cinnamon. Lores velvety black. Back black with bluish iridescence, streaked with white and light grey. Rump deep chestnut like forehead. Lesser upper wing coverts dull slaty with faint iridescence; greater primary and secondary coverts lighter, without iridescence, faintly tinged with brownish, and edged beige distally. Primaries and rectrices similar to greater coverts. Upper breast greyish tinged with cinnamon, lower breast darker, approaching chestnut, as are sides and flanks. Belly creamy white. Crissum cinnamon; undertail coverts often marked with blackish, otherwise cinnamon. On dried specimen, bill shiny black, legs and feet dull dark brown. Measurements of the holotype are wing chord 103 mm, tail 43 mm, bill (nostril to tip) 5.3 mm, tarsus 11.3 mm. The type series is uniform with respect to the characters outlined above. Sexes, although similar in coloration in other populations examined, could not be compared for this population owing to lack of male specimens.

Etymology. Named for the island of Puerto Rico, Greater Antilles, which holds all known populations.

Distribution. Endemic to Puerto Rico, Greater Antilles. Resident.

Remarks. This form, formerly not distinguished from other West Indian populations, especially those of Jamaica, is clearly distinct and diagnosable from nearby populations based on the dark brown undertail coverts. Ridgway (1904), who rarely failed to understand biological situations such as this one, had but one worn adult specimen available to him from Puerto Rico, making comparisons difficult.

Petrochelidon rufocollaris rufocollaris (Peale 1848)

Distribution. Pacific coast of northern and central Peru only. Resident.

Diagnosis. Differs strikingly from *P. fulva* and *P. pelodoma* in greatly reduced chestnut of forehead, and in contrasting white throat (sometimes tinged with grey) and brown breast band.

Petrochelidon rufocollaris aequatorialis Chapman 1924

Distribution. Pacific coast of southwestern Ecuador, in provinces of Loja and Guayaquil only. Resident.

Diagnosis. Differs subtly from *P. r. rufocollaris* in having the throat and cheeks more tinged buffy, and by the deeper chestnut of breast and sides (Ridgely & Tudor 1989).

Synonyms. *H. fulva chapmani* Brooke 1974 (see Parkes 1993).

Conclusions

Based on a review of geographic variation in characters of morphometrics, plumage, and nest structure, we document variation among populations of the Cave Swallow complex. The most distinctive populations were consistently those of South America; populations of Texas and the Caribbean also differed in a variety of character sets. Hence, we suggest that these three subsets of the complex are best considered separate biological species. Within the Caribbean populations, we found characters distinguishing four island populations, each of which can be considered subspecifically distinct, requiring us to describe as a subspecies new to science the populations of Puerto Rico.

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Bulwer's Petrel *Bulweria bulwerii* on St Helena

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On 14 February 1995 MJA found a group of six fresh seabird wings at the top of the steep cliffs at Gill Point, opposite Shore Island, St Helena (15°58'S, 5°43'W). The wings had not been present 16 days earlier. The cliffs here are about 90 m high and consist mainly of loose scoria, with some more massive basalt. They are almost vertical, but a hazardous fishermen's path (which we did not go down) gives access to some rocky ledges just above sea level. The relatively level ground behind the cliff top is a barren volcanic desert locally known as the Bird Ground, where Sooty Terns *Sterna fuscata* have nested—according to a local informant—as recently as about 1984.

One pair of wings belongs to a Madeiran Storm-petrel *Oceanodroma castro,* which is already known to breed on adjacent offshore islets (Rowlands *et al*. 1998) and may also do so at Gill Point. Two other pairs are from Bulwer's Petrels *Bulweria bulwerii,* which in the North Atlantic breed commonly in the Madeira group and Salvages and more rarely in the Azores, Canaries and Cape Verde islands. These birds apparently winter to 39°S in the South Atlantic (Bourne 1995), where they have not yet been found breeding although they commonly nest alongside *O. castro* in the North Atlantic. *B. bulwerii* also breeds widely in the NW Pacific and south to 10°S in the Marquesas; these birds may winter in the Indian Ocean (Marchant & Higgins 1990), where a nest has recently been found by Mike Bell at 20°S on Round Island, off Mauritius (Megyesi & O'Daniel 1997). Bones which may have come from a single individual have also recently been found in a Polynesian archaeological site on Henderson Island at 24°S in the central South Pacific (Wragg 1995).

Three of the Bulwer's Petrel wings from Gill Point had broken humeri but were otherwise intact, while the fourth had been detached at the level of radius and ulna, with the carpus somewhat distorted. The wings are from two individuals, with wing lengths of 201 mm and 189 mm respectively. In both birds the primaries are complete, and although first examination suggested that there were some gaps in the secondary series, we have been unable to find any growing feathers and are not now convinced that any are missing; distortion may have occurred at the base of the feathers when the birds were predated. The remiges of both birds seem rather new, though the tips of the longest primaries are slightly damaged, suggesting that the birds had been sitting in rock cavities. The greater secondary coverts are somewhat worn and are paler brown than the other feathers on the dorsal surface of the wings, forming a faint bar.

The birds could have been killed by either fishermen or a feral cat, and the available evidence is ambiguous. The six petrel wings had been broken off cleanly and were found in a group in a small disturbed area with no other remains, which supports the first hypothesis. Sooty Tern eggs have been collected for food on St Helena for centuries, and adults and young of "trophy birds" (Red-billed Tropicbirds *Phaethon aethereus*) have traditionally been eaten. This practice has declined recently but may still occasionally occur. Nobody we spoke to mentioned the taking of smaller seabirds, but we think it possible that bird carcasses might be used for bait. In Madeira large numbers of Bulwer's Petrels were minced alive to produce fishing bait as recently as July 1981 (Le Grand *et al*. 1984).

Cat predation is also plausible. A mummified kitten was found under bird bones and feathers in the floor of a small cave less than 50 m from where the wings were found, and the bleached skeleton of an adult cat was found in the open about 500 m inland from the site. On the ground above the cliff, and especially in some of the holes and crevices, are many bones, feathers and even eggshells of Sooty Terns, together with wing bones and other remains of Madeiran Storm-petrels. Cat scats can be seen in the area and Olson (1975) showed that a substantial proportion of scats collected on the island included remains of birds.

Both *Rattus norvegicus* and *Rattus rattus* are also present on the island, but we did not see evidence of them at Gill Point; we also doubt whether rats would have broken the humeri of the birds. It is unlikely that the birds were killed by a vagrant Peregrine *Falco peregrinus* or other bird of prey; sightings of raptors are exceedingly rare at St Helena and the remains were not typical of raptor kills.

The subfossil bird bones found in various parts of St Helena indicate that many species of seabird that no longer breed on the island must have done so in the past (Ashmole 1963, Olson 1975, Walker 1977). These include another species attributed to the genus *Bulweria, B. bifax* described by Olson (1975) as being intermediate between that genus and *Pterodroma* (hence the Latin specific name meaning "two-faced"). Ashmole (1963) has already noted that the few bones of this form in the collection of the Natural History Museum, Tring, are similar to those of the smaller, more lightly built gadfly petrels of the genus *Pterodroma* included by Fleming (1941) in the subgenus *Cookilaria,* which Olson (1975) apparently did not examine. In any case *B. bifax* appears to have been larger than the present birds, with ulnae measuring 69.5 and 71.8 mm compared with 66 mm in the larger of our wings and 58–65 in ten *B. bulwerii*. Ulnae from *Pterodroma defilippiana* (a member of the *Cookilaria* group from the SE Pacific) collected by WRPB are similar to those of *B. bifax* and measure 69–71 mm.

How, then, should we interpret the presence on shore on St Helena of two *Bulweria bulwerii?* The plumage of the specimens indicates that both were adult or subadult birds which had fairly recently completed a moult of the remiges. They had come to land in a place frequented by seabirds of several other species. The critical question is whether they were migrants from the north or were members of a local breeding population, either recently established or previously overlooked. The answer must await further evidence, but worldwide data on the timing of breeding in *Bulweria bulwerii* (Mougin *et al.* 1992, Megyesi & O'Daniel 1997) show that at higher latitudes the species typically breeds during the local summer; birds with fresh remiges late in the northern winter (early February) might therefore belong to a northern hemisphere breeding population. However, laying has been recorded in both January and May in the Cape Verde archipelago and may occur year round in the Phoenix Islands near the equator in the Pacific, so it is hard to predict what seasonal pattern might be shown if there was a breeding population on St Helena.

Seabirds commonly frequent the windward side of islands, presumably to soar in the updraughts. At St Helena Masked Boobies *Sula dactylatra,* which breed on the offshore islets, habitually pass over Gill Point, gliding northwards along the coast just above the cliff top; seabirds of several other species also regularly pass by the point. Leach's Petrels *Oceanodroma leucorhoa* have been reported visiting and displaying at islets resembling their northern hemisphere breeding places off the Chatham Islands (Imber & Lovegrove 1982) and breeding on them off South Africa (Ryan & Whittington 1997). The recent discovery that Bulwer's Petrel also breeds well south of the equator in the Indian Ocean (Megyesi & O'Daniel 1997) makes it advisable to bear in mind the possibility that it might also breed on St Helena.

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Further additions to the avifauna of Zambia

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Dowsett (1997a) documented the species added to the Zambian list since the publication of Benson *et al.* (1971). This latter has remained the standard work on the birds of Zambia, but will in time be completely up-dated by the publication of an annotated atlas (Dowsett, Aspinwall & Dowsett-Lemaire in prep.). It is appropriate to detail those species found for the first time in the country since 1978. No fewer than 7 species were added during 1979 alone, and there have been an additional 17 since. These bring to 743 the number of species for which occurrence in Zambia is confirmed.

RJD and the late DRA examined the published and unpublished evidence for all claimed additions to the Zambian list up to November 1995, the time of DRA's tragic disappearance. In the case of species with which we were not very familiar we sought the advice of external referees. We have considered all rarity records that have appeared in the monthly *Newsletter* of the Zambian Ornithological Society and elsewhere, and believe that only the species mentioned below have been proven sufficiently to warrant acceptance. For most species there is evidence in the form of a specimen, photograph or tape-recording (specimens being housed in the national collection of the Livingstone Museum). In the case of species whose occurrence is based only on sight records, the Zambian Ornithological Society's policy is that those reported by just a single observer (however competent) should be placed in square brackets pending a further, confirmed record. Co-ordinates are given for localities not listed in the gazetteer of Benson *et al.* (1971).

CAPE SHOVELER *Anas smithii*

This species was mentioned in square brackets by Benson *et al.* (1971), on the basis of a single-observer sighting by RJD of a male at Lochinvar on 10 and 15 September 1969. Its occurrence as an occasional non-breeding visitor to southern Zambia, perhaps in years of drought in southern Africa, has been confirmed by a further 4 records. These are from Livingstone, Lochinvar (twice) and Lusaka: up to 3 birds have been seen, and photographed (DRA *et al.*), between 29 August and 20 April, though with none in December or January. One at Lusaka stayed from 29 August to 18 November 1982, and (perhaps the same bird) re-appeared 23 February–1 March 1983.

[**FOREST BUZZARD** *Buteo oreophilus*

One, hunting low, flew over the border road on the Nyika Plateau and continued down a wooded valley into Zambia on 21 December 1989 (R. D. Medland). There are multiple-observer sightings (and tape-recordings) from the eastern (Malawi) side of the Nyika, but it can be no more than a vagrant to the more isolated forests of the western side: RJD and F. Dowsett-Lemaire (who first discovered the species on the Nyika) never saw it on the Zambian side during nearly three years of resident ornithological studies 1979–81.]

GREATER SPOTTED EAGLE *Aquila clanga*

An adult, on which a satellite transmitter was placed in Poland, was tracked to the South Luangwa National Park, spending some three months in Zambia, from *c.* 17 December 1996 to 11 March 1997 (Meyburg *et al.* 1997; B.-U. Meyburg *in litt.*). This bird returned to Europe the following breeding season, and its identity was then confirmed by several ornithologists. It was again tracked to the Luangwa Valley in 1997–98 (Meyburg *et al.* 1998, who present a photo of this individual). Hitherto the winter range of *A. clanga* was not known to be to the south of Uganda and Kenya: it has apparently been overlooked by observers in Zambia.

SOOTY FALCON *Falco concolor*

The first accepted record was of one seen at Kitwe on 10 March 1978, where a later individual was photographed (Penry 1979a, 1979b). To date there have been *c.* 20 acceptable sightings (several observers), from the Kasaba Bay and Mwinilunga south to Homani in Chama district (11°14′S, 33°11′E) and Choma. Extreme dates are 4 November to 28 April, although there is one record of a possible (where field notes do not exclude the possibility of Eleonora's Falcon *F. eleonorae*) as early as 2 October. Most are apparently on passage November and December.

[**GREY KESTREL** *Falco ardosiaceus*

Since first being reported by Jones (1974), there have been sightings claimed by a number of observers at Kasaba Bay and elsewhere in Sumbu National Park on Lake Tanganyika. Up to three birds have been reported at different times throughout the year, and it has been suggested that it probably breeds there. Regrettably, none of these records is supported by photographs or an adequate description. We know of at least three sightings claimed elsewhere in northern Zambia, but do not believe that any has satisfactorily ruled out the possibility of *Falco concolor* or other similar species. Nevertheless, the occurrence of Grey Kestrel in southern Zaire (Louette 1989), and a vagrant specimen from northern Malawi (Nhlane 1993), suggest strongly that it does occur at times in northern Zambia.]

[WHITE-WINGED FLUFFTAIL *Sarothrura ayresi*

One female was reportedly seen by W. F. Bruce-Miller at Greystones, near Kitwe, on 13 February 1981. This record may well be correct (the movements of this species being not at all understood), but the possibility of some other species, perhaps partially albinistic, is not completely ruled out. An earlier sighting was reported by Brooke (1964), of one seen briefly and independently by two observers, on 5 November 1962, 17 miles west of Chingola, on the road to Solwezi. This was not accepted by Benson *et al.* (1971), and the record was later withdrawn by one of the observers.]

[LITTLE CRAKE *Porzana parva*

Taylor (1980c) reports a male well seen at Itawa swamp, Ndola, on three occasions 1–13 March 1980. While this record, by far the most southerly in Africa, is probably correct, being a single observer sighting it is placed in square brackets.]

KORI BUSTARD *Ardeotis kori*

On 5 and 22 August 1997 one was well seen in the Sindabezi area, west of Livingstone, by R. Stjernstedt. Near Kazungula a single bird was seen to fly across the Zambezi River from Zimbabwe, on 24 April 1998 (K. Hustler, F. Ambrose *et al.*, *in litt.*). It was watched for 3 minutes, and eventually landed within Zambia. Known already as an occasional wanderer to the Victoria Falls area, and regular near Kazungula, these are the first reliable reports from the Zambian side of the Zambezi.

LITTLE RINGED PLOVER *Charadrius dubius*

There have been seven records, of one or two birds, at Luanshya, Chisamba and Kafue, east to near Chipata, since the first on 10 November 1979 (Taylor 1980a). The species has subsequently been photographed. Extreme dates are 27 September and 20 February. Zambia is at the southern limit of this Palaearctic migrant's winter range.

CHESTNUT-BANDED PLOVER *Charadrius pallidus*

There are two acceptable sight records, of one at Victoria Falls, 14 October 1979 (Pollard 1980) and one at Luanshya on 23 August and 13 September 1980 (Taylor 1982). A further report of a "possible" at Lusaka in 1979 was a misidentified White-fronted Plover *C. marginatus*.

SPOTTED REDSHANK *Tringa erythropus*

A bird reported from the Busanga plain in Kafue National Park on 24 October 1964 (Brooke 1966: 67, 86) was seen by both H. A. and P. L. Britton (*in litt.*). A good description was published, and we accept the record (it was placed in square brackets by Benson *et al.* 1971). One other record has been claimed: one heard at Lochinvar by P. B. Taylor on 28 September 1975. We feel that the possibility of confusion with the voice of other waders was not excluded, and so regard this second record as unconfirmed.

LESSER YELLOWLEGS *Tringa flavipes*

An individual of this Nearctic vagrant was seen by several people and photographed at Kafubu dam, near Ndola (13°03′S, 28°35′E), 21 January–18 February 1979 (Taylor 1980d). One photographed at Lochinvar, 23 & 24 June 1990, is considered to be a Greenshank *T. nebularia.*

SOLITARY SANDPIPER *Tringa solitaria*

One was present at Lilayi lodge near Lusaka (15°33′S, 28°20′E) from 23 January to 27 February 1994 (Aspinwall *et al.* 1995). It was seen by several people, photographed and tape-recorded. This is the only acceptable record of this Nearctic vagrant from mainland Africa.

KNOT *Calidris canutus*

An example of this coastal migrant was watched at Luanshya 7–9 December 1985 (R. J. Casalis de Pury, P. A. Gregory *et al.*), and the identity confirmed by photographs.

PECTORAL SANDPIPER *Calidris melanotos*

This species has been reported in Zambia on seven occasions: single birds have been seen at Ndola, Luanshya, Chisamba, Lusaka, Kafue and Lochinvar, since first found by C. Carter and P. B. Taylor (Taylor 1980d). Photographs are available. Four records fall between 12 November and 24 December, with one 4–5 February and two in April, the latest 21 April. There are now a good number of African records, but it is not clear if they are of Nearctic or Palaearctic origin.

RED-NECKED PHALAROPE *Phalaropus lobatus*

A single bird was seen and photographed at Itawa swamp, Ndola, 29 September–1 October 1985 (C. Carter, D. Shepherd *et al.*).

FRANKLIN'S GULL *Larus pipixcan*

An adult of this Nearctic species, in non-breeding dress, was well seen at Lochinvar 25 January 1997 (PML *et al.*). There have been a number of records in southern Africa in recent years (e.g. Hockey *et al.* 1996).

COMMON TERN *Sterna hirundo*

At Luanshya one (in non-breeding plumage) was present 5–7 October 1979, seen by several observers, and its identity confirmed from photographs (Taylor 1980b).

BURCHELL'S SANDGROUSE *Pterocles burchelli*

The first fully acceptable record of this southern arid species was of a group of three (and others) well seen on a dry plain near Imusho, 18 September 1996 (PML, C. Beel). Two singles had earlier been reported on the Zambia-Angola-Namibia border, also in the Imusho area, Sesheke district, on 12 August 1994 (DRA). Just extra-limitally, six were in *Terminalia* on the Zambezi floodplain 20 km east of Sesheke (in Namibia) 26 October 1994 (DRA). It is not known if the species occurs regularly in that area, or if it is a vagrant in certain years only. This border zone was out of bounds for many years, and there is no resident observer.

[**SPECKLED PIGEON** *Columba guinea*

Local reports and even place names suggest that this species may have occurred in the past at certain localities along the Zambezi escarpment (W. F. Bruce-Miller pers. comm.). This requires investigation; there are no confirmed or documented sightings to date and there are no such records from the Zimbabwe side (Irwin 1981).]

BARRED LONG-TAILED CUCKOO *Cercococcyx montanus*

On 23 February 1983 R. Stjernstedt and S. Silow heard one in thickets in the low-lying Gwembe valley, at Mutulanganga bridge (15°14′S, 28°44′E) (Stjernstedt 1984). On later visits it was tape-recorded, seen by a number of observers and a specimen collected. It has since been found at this locality on several visits, but not annually (in 8 of the 14 years since 1983). It does seem to be regular enough at this locality to rule out the suggestion that it is a vagrant, its occurrence possibly as a result of recent drought in southern Africa (T. O. Osborne in the Z.O.S. *Newsletter* 1983, 13: 56). Only 2 or 3 calling birds occur at Mutulanganga, and the cuckoo is not always easy to locate, sometimes calling at night. In addition, this cuckoo may be imitated by the local Red-capped Robins *Cossypha natalensis* (DRA), and so care needs to be taken with vocal records. Extreme dates overall are 23 November and 26 February.

Although not yet found at other suitable localities in the Gwembe and middle Zambezi valleys, there are now two acceptable records from the Luangwa valley. At Chibembe (12°47′S, 32°04′E) one was seen by three observers 13–17 March 1989 (R. Macdougall *et al.*), while at Muchenja, near Nsefu (*c.* 12°56′S, 31°56′E), one was heard on 29 October 1991 (R. Stjernstedt). These may perhaps be passage birds, as the species seems to be a rains visitor to this part of Africa, and RJD, R. Stjernstedt and others who have lived in the Luangwa valley have no other records.

[**WHITE-THROATED BEE-EATER** *Merops albicollis*

Clancey (1962) reported a specimen (housed in the National Museum, Nairobi, Kenya) labelled "Kafui 15 July 1934". This record was not accepted by Benson *et al.* (1971) owing to the lack of any background information for this specimen, and the (then) unlikelihood of the species occurring well south of the equator. There have in recent years been acceptable sight records from even further south, in South

Africa (Hockey 1992), and so the possibility of the Kafue specimen being correct must be acknowledged. But this record cannot itself be accepted without question, as we still know nothing of who collected it and exactly where. There was no-one active in ornithology in 1934 in what was then Northern Rhodesia, and it is impossible to guess who might have obtained this bird.

More recently, it was suggested that one occurred in the Luangwa Valley in 1994, but no satisfactory details have been received.]

SOUTH AFRICAN CLIFF SWALLOW *Hirundo spilodera*

Five sight records have been claimed, and the latest was seen by two independent observers: Chitunta plain, one 13 November 1978 (Dowsett 1979b); Kamukawu lake (11°42′S, 24°35′E) *c.* 8 on 7 August 1981 (Bowen 1983); Mulondo plain (not traced, but in square 1423D), Kaoma district one 24 October 1982 (DRA); Itawa, Ndola one immature 25 April 1987 (C. Carter); one near Tsidongo, Senanga district (*c.* 16°40′S, 22°20′E) on 19 September 1996 (PML, C. Beel). The species occurs on passage between southern Africa and non-breeding quarters near the equator.

GREY WAGTAIL *Motacilla cinerea*

Aspinwall (1981) reported one seen at Chinkuli, near Lusaka (15°18′S, 28°23′E) on 1 May 1979. Subsequently there have been four further acceptable sightings, some by several observers, between 22 November and 9 December. While three are from streams in the north of the country (at Mwekera falls, the Kafubu stream and Shiwa Ngandu), there was a second report from near Lusaka (on 9 December). This species has been reported increasingly in recent years in southern Africa, normally in highlands in the eastern half, and it may be that most Zambian records are of passage birds. One on the unusual date of 17 August 1986, at Kafue, is considered unproven.

RED-THROATED PIPIT *Anthus cervinus*

There have been four recent reports of one or two birds at localities on the Copperbelt, since the first on 18 March 1979 (Taylor 1979). In 1980, 1983 and 1986 up to two were seen by several observers independently. Extreme dates are 19 November and 18 March.

WHITE-WINGED WARBLER *Bradypterus carpalis*

The least expected discovery in Zambia in recent years has been that of *Bradypterus carpalis* at the mouth of the Luapula on Lake Mweru (the channel to Chisenga Island) on 30 December 1996 (PML, C. Beel). They were discovered through PML recognizing the voice as being notably faster than that of the Little Rush Warbler *B. baboecala*. The observers consider the species rather common. *B. baboecala* was seen at the same place. Three specimens were collected on 2 January 1998 in papyrus swamp near Chabilikila Primary School (9°32′S, 28°42′E). The voice of the two is usually similar in timbre and pitch, but differs in details of structure. However, it seems that in most areas of sympatry (i.e. Rwanda, Kenya etc.) *B. baboecala* produce a very

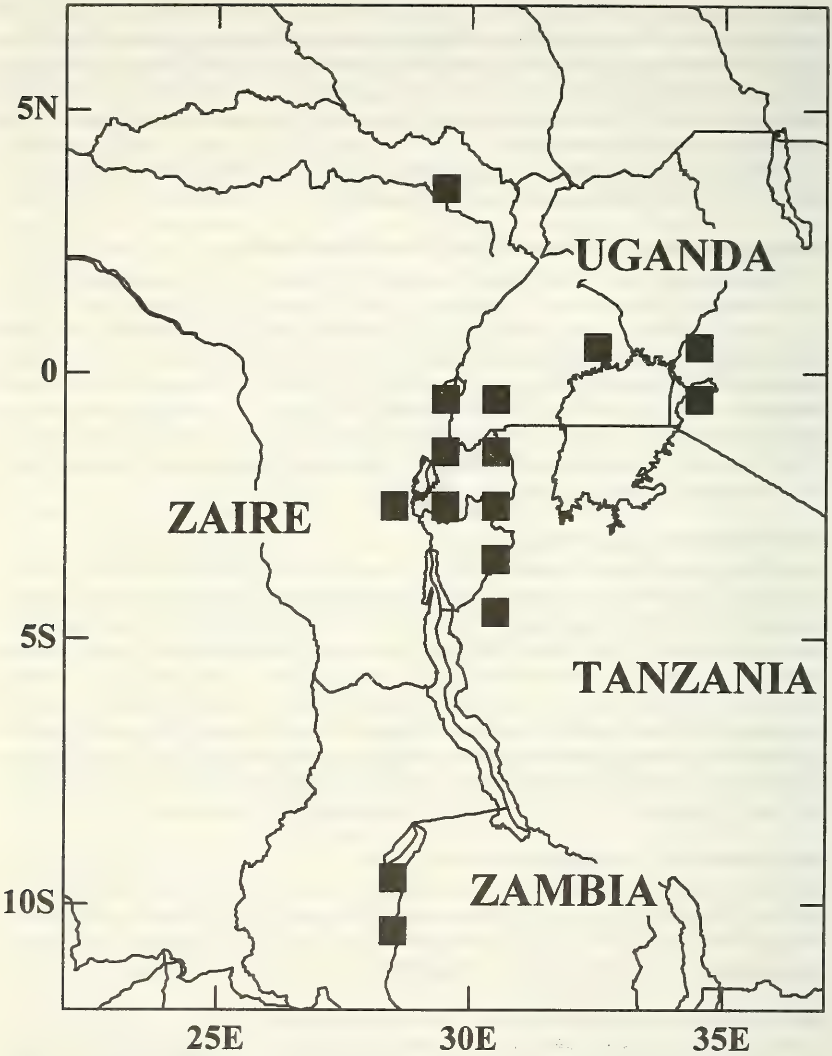

Figure 1. Known distribution of White-winged Warbler *Bradypterus carpalis*, plotted by degree square (using the computer programme DMAP).

high-pitched version of the usual crescendo (F. Dowsett-Lemaire pers. comm.). The relationship between *B. carpalis* and *B. baboecala* in the Mweru area remains to be investigated.

This undoubtedly vulnerable species, almost confined to papyrus swamps, was hitherto known no nearer than the area centred on Burundi, Rwanda and Uganda (Collar & Stuart 1985), some 600 km to the north (Fig. 1). Another papyrus endemic, the Yellow Swamp Warbler *Chloropeta gracilirostris*, was already known from the Lake Mweru area.

[RED-TAILED SHRIKE *Lanius isabellinus*

A shrike with the characters of the race *phoenicuroides* was seen near Kitwe on 12 November 1974 (Penry 1975), and one or two others have been reported on four occasions elsewhere near the Copperbelt at Musofu (13°31′S, 29°03′E) (C. Carter), in western Zambia, 5 km south of Sianda (15°35′S, 23°18′E) (Rev. W. Dunlop), and twice on the Nyika Plateau (F. Dowsett-Lemaire, R. D. Medland). It may be regular in the last area, whence there are at least two multiple-observer records from the Malawi side (RJD *et al.*). Nevertheless, confirmation of these single-observer records is desirable. Extreme dates of the Zambian sightings are 12 November–2 December and 29 March–17 April.]

SCALY-FEATHERED FINCH *Sporopipes squamifrons*

This species was discovered in 1994 by DRA and A. Muchindu at Kazwili village (*c.* 17°29′S, 24°52′E), along the Livingstone-Sesheke road: groups of 20 and 6 on 9 August, 3 on 10th, 6 on 15th. In 1995 they were found at a second site: at least 4 at Limpumpu school, Loanja river near the Simungoma-Mulobezi road (17°14′S, 24°39′E) on 30 July (DRA). A specimen was collected. This area has been fairly well explored ornithologically, and it seems likely this finch is no more than an erratic dry season visitor.

LAKE TANGANYIKA WEAVER *Ploceus reichardi*

This species was found by PML on the Saisi river, near Kaka, in Mbala district, 8 January 1996 (08°57′S, 31°44′E). The bird was numerous, some 200–300. PML and C. Beel were able to mist-net 15 in the evening of 10 January, retaining three (including an adult male) as specimens. This is evidently the only representative of the *P. velatus* complex in this part of Zambia. It is called Lake Lufira Weaver by Dowsett & Forbes-Watson (1993) who tentatively lump it with the unique *P. ruweti*—but it is better known as the Lake Tanganyika Weaver.

OLIVE-HEADED WEAVER *Ploceus olivaceiceps*

This miombo woodland endemic occurs marginally in eastern Zambia, along the border with Malawi. Aspinwall (1979) discovered it on 21 February 1979, in the Chimaliro National Forest (12°22′S, 33°32′E), where PML and P. Bourdin refound it in September 1995. Subsequently it has been noted south to the headwaters of the Chiwali river near Misale farm, Chadiza District (14°02′S, 33°03′E). It is rare in the last area, but found regularly at some other sites, as always in *Usnea*-clad miombo trees.

GREEN INDIGOBIRD *Vidua codringtoni*

Since the discovery of this species by Payne *et al.* (1992), observers familiar with the song of its host the Red-throated Twinspot *Hypargos* *niveoguttatus*, notably DRA and R. Stjernstedt, have paid attention to determining the Green Indigobird's distribution and status in Zambia. Most observations have been from the area of Kasisi mission near Lusaka (15°16'S, 28°28'E), but it is confirmed from several other places from the Luangwa valley (Nsefu, Mfuwe) south to the Lusaka-Chilanga area and Lochinvar. R. B. Payne believes this new form can be confidently related to the taxon *codringtoni*, formerly attached to *V. funerea*. This being so, the type locality is Muliro, near Old Petauke. The occurrence of this species in Zambia was noted by Dowsett (1993), but inadvertently omitted by Dowsett & Forbes-Watson (1993).

Acknowledgements

RJD and PML's greatest debt, and that of all who are interested in current Zambian ornithology, is to our colleague the late Dylan Aspinwall, who did so much to investigate, document and motivate. Others who have contributed significantly to the careful documentation of rare birds in Zambia include: Phil Bowen, Paddy Bruce-Miller, Clide Carter, John Robjent, Roger Casalis de Pury, Huw Penry, Bob Stjernstedt and Barry Taylor. Kit Hustler, B.-U. Meyburg and Tony Tree have kindly helped with references. Our thanks to them all.

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Review of the montane bird species from Mindanao, Philippines: Part 1—Black-and cinnamon Fantail, *Rhipidura nigrocinnamomea*

by Kelley R. Reis & Robert S. Kennedy

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Most of the Philippine archipelago's avifauna is a "fringing archipelago" type, the result of colonization and evolution of endemic forms in island isolation (Rand 1970). The study of these endemics is important because forests on these islands are being cleared at an alarming rate (Dickinson *et al.* 1991). To assess the effects of deforestation on the Philippine avifauna, the Philippine Biodiversity Inventory (PBI) began in 1989 as a joint survey between the National Museum of the Philippines and the Cincinnati Museum of Natural History. From 1993 to 1995, PBI teams conducted altitudinal surveys in Mindanao on Parker Volcano and Mts. Apo, Busa, Kitanglad, Pasian, and Puting-Bato (see Fig. 1). As a result of these surveys, many new distributional records were obtained and many new taxa were

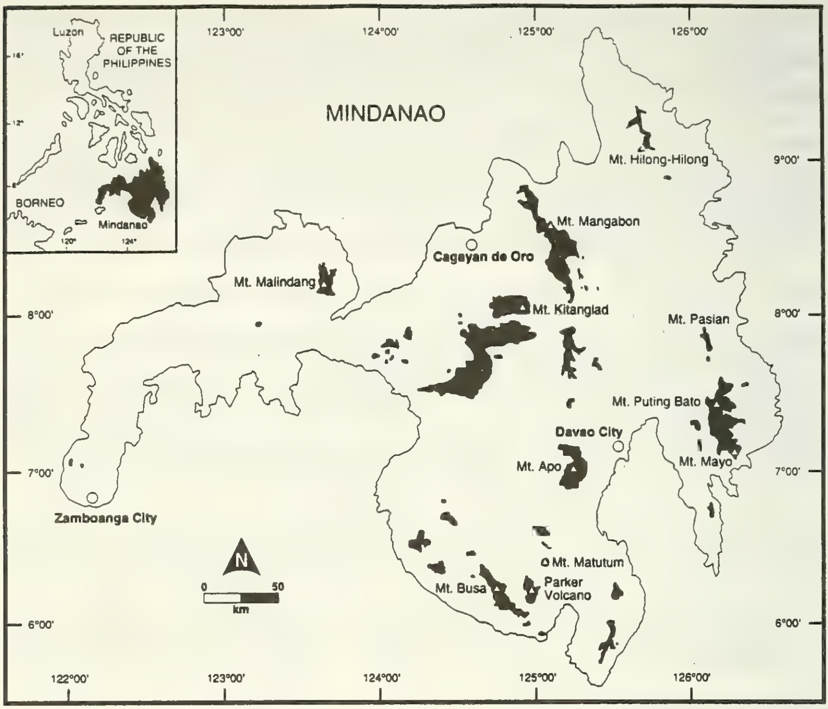
Luzon
REPUBLIC OF THE PHILIPPINES
16°
12°
BORNEO
Mindanao
120°
124°
123°00'
124°00'
125°00'
126°00'
MINDANAO
Mt. Hilong-Hilong
9°00'
Mt. Mangabon
Cagayan de Oro
Mt. Malindang
8°00'
Mt. Kitanglad
Mt. Pasian
Mt. Puting Bato
Davao City
Mt. Apo
Mt. Mayo
7°00'
Zamboanga City
N
0
50
km
Mt. Matutum
Parker Volcano
Mt. Busa
6°00'
122°00'

Figure 1. Map of Mindanao, Philippines showing the distribution of *Rhipidura nigrocinnamomea* (named mountain peaks marked by triangles) and the distribution of land above 1,200 m (filled black) on the island.

discovered, including a new species and subspecies of sunbird (Kennedy *et al.* 1997).

This paper, on the Black-and-cinnamon Fantail, *Rhipidura nigrocinnamomea*, is the first of a series reviewing the systematics and biogeography of montane bird species of Mindanao. This fantail is a common endemic of Mindanao and inhabits the understorey up to 15 m above the ground at elevations greater than 1,000 m in mid-montane and mossy forest. Hartert (1903) described *R. nigrocinnamomea* based on specimens obtained by Walter Goodfellow on Mt. Apo (see Fig. 1 for this and subsequent localities) in April 1903. A second population was described by Mearns (1906) as a separate subspecies (*R. nigrocinnamomea hutchinsoni*) based on plumage colouration from specimens obtained from Mt. Malindang in June 1906. *Rhipidura n. hutchinsoni* has since been recorded from Mt. Kitanglad (Ripley & Rabor 1961) and the Mt. Mangabon range (previously reported as Civolig and Daggayan) south of Gingoog City, Misamis Oriental (Meyer de Schauensee & duPont 1962). Dickinson *et al.* (1991) listed specimens from Mt. Matutum and Mt. Mayo under the latter race but did not verify these as subspecies. The PBI teams discovered new populations of this species on Mt. Busa, Mt. Puting-Bato, and Parker Volcano and we located unreported specimens from Mt. Hilong-Hilong. In this paper we review all known populations of *R. nigrocinnamomea* and assign them to subspecies.

Materials and methods

We examined specimens from the Museum of Natural History & Science, Cincinnati Museum Center (CMNH), Delaware Museum of Natural History (DMNH), Florida Museum of Natural History (VF), Field Museum of Natural History (FMNH), and National Museum of Natural History, Smithsonian Institution (USNM).

Specimens examined

Rhipidura n. nigrocinnamomea: (54) Mt. Apo—8 males, 6 females (NMP-CMNH), 4 males, 2 females (FMNH), 2 males, 1 female (DMNH), 4 males, 2 females, 2 unsexed (USNM); Mt. Busa—5 males, 3 females (NMP-CMNH); Mt. Matutum—2 males (FMNH), 2 males, 2 females (DMNH); Parker Volcano—7 males, 1 female, 1 unsexed (NMP-CMNH). *Rhipidura n. hutchinsoni*: (88) Mt. Hilong-Hilong—2 males, 1 female (FMNH), 1 male, 2 females, 2 unsexed (DMNH), 5 males, 3 females (USNM); Mt. Kitanglad—3 males, 1 female, 2 unsexed (NMP-CMNH), 11 males, 6 females, 1 unsexed (FMNH); Mt. Mangabon—6 males, 3 females, 1 unsexed (DMNH); Mt. Malindang—14 males, 9 females (FMNH), 3 males, 5 females (USNM); Mt. Mayo—1 male (VF), 1 male, 1 female (FMNH), 2 males, 1 female (USNM); Mt. Puting-Bato—1 male (NMP-CMNH).

Statistical analysis

We used a standard analysis of variance (ANOVA) with unequal sample sizes to analyse differences in wing chord, tail length, tarsus length, culmen from base to tip and mandible length between sexes with all populations combined, and within a sex, between populations. We performed within-sex comparisons using three different treatments for assigning populations. The first treated each of the eight known populations separately (because of their proximity to one another we treat Mt. Mayo and Puting-Bato as one population, and Mt. Busa and Parker Volcano as one population). The second grouped populations with little or no geographical barriers between them as follows: Group 1—Mts. Apo, Busa, Matutum, and Parker Volcano; Group 2—Mts. Hilong-Hilong, Mayo, and Puting Bato; Group 3—Mts. Kitanglad and Mangabon; and Group 4—Mt. Malindang. The third compared the two subspecies of *R. nigrocinnamomea* after we combined populations with similar plumage.

Plumage comparisons

We compared plumage patterns and colours between sexes within and between each of the eight populations.

TABLE 1
Measurements (mm) of *Rhipidura nigrocinnamomea*, all populations combined

Measurements	Males $n=68$		Females $n=45$	
	X ± SD	Range	X ± SD	Range
Wing chord**	75.2 ± 2.1	70.1–80.6	71.8 ± 2.6	66.5–77.0
Tail**	83.3 ± 2.9	76.5–87.8	81.1 ± 2.7	75.4–87.0
Tarsus	16.1 ± 0.8	15.0–18.5	16.5 ± 0.8	14.7–18.5
Culmen**	13.8 ± 1.0	10.7–15.9	13.4 ± 0.7	11.5–15.0
Mandible	7.7 ± 0.5	6.1–8.7	7.5 ± 0.5	6.3–9.0

**Statistical significance ($P \leq 0.01$) related to differences between sexes.

Results and discussion

Sexual dimorphism

We found no significant ($P \leq 0.01$) morphological variation between females and between males within any of the population comparisons. However, at the species level, males are significantly ($P \leq 0.01$) larger than females in wing chord, tail length, and culmen length. Measurements of males and females for all populations combined are summarized in Table 1. We found no colour or pattern differences in plumage between the sexes.

Geographic variation

We agree with the recognition of two subspecies for *R. nigrocinnamomea* based on substantial variation in plumage colouration between populations of central and southern Mindanao and those found elsewhere on the island. Below we highlight plumage characteristics unique to each subspecies and point out the minor variations that we have observed between the populations of each subspecies.

R. n. nigrocinnamomea

Birds from the type locality, Mt. Apo, are characterized by a white upper breast merging into a pale cinnamon breast and belly, and a white line across the forehead connecting two short superciliary bands. The white upper breast is variable in width and ranges from nearly absent to very broad. Birds from Mt. Matutum have a broad white chest band but tend to have a slightly darker cinnamon belly. Specimens from Parker Volcano and Mt. Busa have the broadest white upper breasts, and their bellies, although variable, are paler than those from Mt. Apo. We do not consider the variations of Mts. Matutum and Busa, and Parker Volcano specimens sufficiently different from Mt. Apo specimens to warrant separation, and thus include them in *R. n. nigrocinnamomea*.

R. n. hutchinsoni

Birds from the type locality, Mt. Malindang, are distinguished by the absence of white on the upper breast and by having a deeper cinnamon hue on the breast and belly. Like *nigrocinnamomea*, they have a white band across the forehead that joins white superciliary stripes over the eye. This characteristic is more variable in *hutchinsoni* with some specimens having a very broad band and some very narrow.

Birds from Mt. Kitanglad and Mt. Mangabon appear to be identical to each other but tend to be slightly paler than those from Mt. Malindang. Ripley & Rabor (1961) have pointed out from Mt. Kitanglad birds, and Meyer de Schauensee & duPont (1962) for Mt. Mangabon birds, that a few individuals have small amounts of white in the upper breast approaching the least white breasted individuals of *R. n. nigrocinnamomea*. We agree with Ripley & Rabor (1961) and Meyer de Schauensee & duPont (1962) that these populations are somewhat intermediate between the two subspecies but that they are closer to *R. n. hutchinsoni* and should therefore be assigned there.

Individuals from Mts. Hilong-Hilong, Mayo, and Puting-Bato are similar to one another. They differ from Mt. Malindang birds by generally having darker cinnamon underparts and a less pronounced white band on the forehead. Although these differences are marked, we cannot conclusively assign them to a new taxon based on the limited material before us from these populations; thus they should be considered representative of *R. n. hutchinsoni*.

During the PBI surveys, frozen and/or alcohol preserved tissues were obtained from Mts. Apo, Busa, Kitanglad, and Puting-Bato. Analysis of these tissues could substantiate genetic differences between the populations and further clarify the status of the subspecies of this fantail.

Altitudinal distribution

Published altitudinal records of *R. nigrocinnamomea* include 2,438 m (8,000 ft) on Mt. Apo (Hartert 1903), 1,219 to 2,404 m (4,000 to 9,000 *sic* ft) on Mt. Malindang (Mearns 1907), and 991 m (3,250 ft) and 1,219 m (4,000 ft) at Civolig and Daggayan, respectively, in the Mt. Mangabon range (Meyer de Schauensee & duPont 1962). The altitudinal information of unpublished data recorded on specimen labels or from the altitudinal surveys made by the PBI team are summarized in Table 2.

There is some evidence to suggest that the lower limits of the altitudinal range of *R. nigrocinnamomea* may be changing as a result of deforestation and/or competition with its Mindanao congener, the Blue Fantail, *Rhipidura superciliaris*, which is found at elevations less than 1,200 m. In 1972 and 1973, Kennedy did not see *R. nigrocinnamomea* in the forests of the Baracatan field station (*ca.* 1,000 to 1,100 m) on the boundary of Mt. Apo National Park in Toril, Davao City, although he visited the area on more than 10 different occasions. Instead, the Blue Fantail was common at the site. Between 1977 and 1983, Kennedy saw the Black-and-cinnamon Fantail at this same site several times but the Blue Fantail was still the predominant species. Most of the forest below the field station had been cleared by that time. During the 1993 PBI survey at the same site, only *R. nigrocinnamomea* was sighted (10+) and captured (5 specimens) in the vicinity. This suggests that due to

TABLE 2
Altitudinal distribution of *Rhipidura nigrocinnamomea* on Mindanao, Philippines. *n*=number of specimens

Location	Altitudinal range (m)
Rhipidura n. nigrocinnamomea	
Mt. Apo (*n*=57)	1,060–2,438
Mt. Busa (*n*=9)	1,273–1,516
Mt. Matutum (*n*=3)	1,128–1,676
Parker Volcano (*n*=9)	1,800
Rhipidura n. hutchinsoni	
Mt. Hilong-Hilong (*n*=8)	1,219–1,935
Mt. Kitanglad (*n*=24)	1,100–1,890
Mt. Malindang (*n*=23)	1,067–2,270
Mt. Mangabon (*n*=9)	991–1,219
Mt. Mayo (*n*=3)	1,585–1,981
Mt. Puting-Bato (*n*=8)	1,190–1,350

removal of the lowland forest below 1,000 m and subsequent competition with *R. nigrocinnamomea*, the Blue Fantail has apparently disappeared at the upper limits of its altitudinal range, while the Black-and-cinnamon Fantail has expanded its range into the lower limits of the remaining forest.

Conservation status

The mid-montane and montane forests of Mindanao with few exceptions are devoid of commercial timber and are usually in areas too steep for agricultural purposes. For these reasons, *R. nigrocinnamomea* is still common and its habitat is not immediately threatened.

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Comments on the taxonomy of the genus *Cynanthus* (Swainson), with a restricted type locality for *C. doubledayi*

by Adolfo G. Navarro-Sigüenza & A. Townsend Peterson

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Howell & Webb (1995) presented a rearrangement of the taxonomy of the hummingbirds of the Mexican near-endemic genus *Cynanthus*, although without explicit justification for changes proposed. They correctly divided the former *C. latirostris* complex into two portions—that of northern and central Mexico (*C. latirostris*), and that of coastal southwestern Mexico (*C. doubledayi*). In addition, they mentioned the form *C. l. lawrencei* of the Islas Tres Marías as a distinct subgroup of *C. latirostris*, at times considered a separate species. While we agree with their conclusions, our examination of series of specimens of each form and several of the types leads us to point out a correction necessary for the accurate documentation of the group's taxonomy.

Nominate *latirostris* was described by Swainson (1827) from the "Tableland of Mexico", a locality later corrected to "Valley of Mexico, near Mexico City" by Moore (1939). Subsequent forms described included *doubledayi*, *toroi*, and *nitidus* of Guerrero and southwestern Mexico, *magicus* of northwestern Mexico, *propinquus* of Guanajuato and Michoacán, and *lawrencei* of the Islas Tres Marías. Clearly, confusion and synonymy are suggested in the plethora of forms named from Guerrero, the subject of the present note.

The name *doubledayi* was first applied by Bourcier (1847) to a specimen apparently now housed in the Loddiges Collection of the Natural History Museum, Tring, allegedly from "Rio Negro", [Brazil]. Subsequently, Salvin & Godman (1889) described *Iache nitida* from a specimen taken by Mrs H. H. Smith at Río Papagaio, Acapulco, carefully contrasting it with what they thought was *doubledayi*:

> This beautiful species is most nearly allied with *I. doubledayi*, but the whole throat and breast are of a richer blue, and the head also is shining blue, not green. The specimen of *I. doubledayi* with which we have compared it is stated to be from Chinantla, and is that figured in Gould's 'Monograph of the Humming-Birds'.

Cory (1918) pointed out Bourcier's erroneous type locality, and added a note "=State of Guerrero, Mexico", and a footnote that "the type probably came from State of Guerrero, Mexico". Cory unfortunately did not specify a locality within Guerrero—a source of future confusion. Peters (1945) also cited the correction of the type locality of *doubledayi* as "Guerrero". The synonymy of *nitidus* and *doubledayi* was established by Hartert (1897) and Salvin & Godman (1879–1904), the confusion clearly arising from Salvin and Godman's comparison of the type of *nitidus* with the Gould Chinantla specimen from outside the range of *doubledayi*.

Then began a series of errors and confusions regarding the taxonomy of the group. Ridgway (1892) reported comparisons with "the type of *I. doubledayi*, kindly lent to me by the American Museum of Natural History in New York City". Greenway (1978), however, indicated that the type of *doubledayi* was not at the American Museum—the type of *latirostris*, however, deposited at that institution, carries the name "Bourcier" referring to its authority for the genus *Circe*, and is apparently the source of Ridgway's confusion. A second error was the citation of the subspecies *doubledayi* as ranging in Puebla and northern Oaxaca by Friedmann *et al.* (1950). They also stated erroneously that its type locality had been designated by Gould as Chimantla (=Chiantla, Puebla).

Reviewing specimens of *Cynanthus* in the collections of the U.S. National Museum of Natural History, Natural History Museum (Tring), University of Kansas Natural History Museum, and the Museo de Zoología of the Facultad de Ciencias, Universidad Nacional Autónoma de México, we summarized variation of male plumage characters in the genus (Table 1). This summary of variation, together with comparisons kindly made for us by Michael P. Walters of Bourcier's type of *doubledayi*, indicate that the specimen coincides closely with the populations of coastal southwestern Mexico, differing from the populations of the interior Balsas Basin (*toroi*) in having a blue rather than green forehead and breast. Cory's (1918) designation is correct, but not sufficiently precise—for this reason, we restrict the type locality of *doubledayi* to Acapulco, an important historical collecting locality on the coast of Guererro.

Considering the geographic patterning of zones of abrupt morphological change, it is possible to divide the genus *Cynanthus* into four diagnosable units. These sets of populations may be considered independent phylogenetic lineages, constituting phylogenetic or evolutionary species, as follows:

1. *C. sordidus* (Gould 1859)—Balsas Depression and surrounding arid highland areas.
2. *C. latirostris* Swainson 1827—Southeast Arizona and northern Mexico south to the plains of Colima and the Balsas Depression,

TABLE 1

Summary of geographic situation, species taxa, and distinguishing characters of named forms of *Cynanthus* hummingbirds

Form	Range	Type locality	Forehead	Throat	Breast and belly	Undertail coverts	Tail cleft
Cynanthus sordidus							
sordidus	Balsas Depression and Valle de Tehuacán	Oaxaca	Dull brownish green	Dull brown	Dull brown	Dull grey-brown	Moderate
Cynanthus latirostris							
magicus	Arizona S to Nayarit and Durango	Mazatlán, Sinaloa	Iridescent green	Iridescent blue	Iridescent green	White	Moderate
latirostris	Central and eastern Mexico	Valley of Mexico	Iridescent green	Iridescent blue	Iridescent green	White	Moderate
propinquus	El Bajío	Irapuato, Guanajuato	Iridescent green	Iridescent blue	Iridescent green	White	Moderate
toroi	Lower Balsas Depression and Plains of Colima	La Estancita, Guerrero	Iridescent green	Iridescent blue	Iridescent green	White	Moderate
Cynanthus doubledayi							
doubledayi	Coast of southwestern Mexico	Acapulco, Río Papagaio	Iridescent blue	Iridescent blue	Iridescent blue	Blue-black	Moderate
Cynanthus lawrencei							
lawrencei	Islas Tres Marías	Islas Tres Marías	Iridescent green	Iridescent green	Iridescent green	White	Deep

including the present subspecies *latirostris*, *magicus* (Mulsant and Verreaux 1872), *propinquus* Moore 1939, and *toroi* (Berlioz 1937).

3. *C. doubledayi* (Bourcier 1847)—Coastal plain of Mexico in Guerrero, Oaxaca, and extreme southwestern Chiapas.
4. *C. lawrencei* (Berlepsch 1887)—Confined to the islands María Madre and María Cleofas in the Tres Marías archipelago.

Given the striking differences and apparent parapatry, these phylogenetic/evolutionary species units may also prove to be distinct biological species as well as upon further study. The discrete character variation among *Cynanthus* populations, focused on head and underparts, recalls strikingly the variation in the genus *Thalurania* (Escalante-Pliego and Peterson 1992), although the geographic distributions of the two genera are quite different.

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New and noteworthy records of birds from the middle Magdalena valley of Colombia

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For four centuries the Río Magdalena was the main conduit for commerce and communications between the Caribbean and much of the densely-populated interior of Colombia, including the capital city of Bogotá. Although much of the Magdalena valley had been converted to agricultural land or pastures as early as the eighteenth century, the very wet middle portion (between about 5° and 7°N) remained heavily forested until relatively recently. Fuelled by glowing (and unrealistic) reports of the region's natural wealth (e.g. Pérez-Arbeláez 1938), in the 1960s and 1970s the Colombian government sponsored a massive, internationally financed railroad-building and colonization programme that resulted in the elimination of nearly four million ha of forest in little over a decade. At present, the valley floor in this region is mostly converted to low-grade pastures on rolling terrain, while the flat alluvial portions are mostly used for mechanized cotton and rice production; forest is reduced to scattered, small, usually highly disturbed patches, especially along streams. On the rugged Andean slopes on both sides of the valley, deforestation was more patchy but reached a peak in the 1970s. Since then, much of the steep, eroded terrain has been at least partly abandoned, producing a mosaic of intermittently cultivated areas, poor pastures, second-growth scrub and low woodland, and occasional patches of mostly disturbed remnant forest in steep-sided canyons and along ridgetops.

Although some of the first ornithological observations and collections in Colombia were made in the Magdalena valley (as summarized by Chapman 1917, Meyer de Schauensee 1964, Olivares 1966 and Mantilla & Díaz 1992), during much of this century the region has usually been bypassed by ornithologists in favour of more pristine areas. Conversely, the effects of the removal of the middle Magdalena forests on the avifauna have either gone practically unremarked or have been somewhat exaggerated (e.g. Graves 1987, Collar *et al.* 1992): there is a noteworthy vacuum of reliable recent information on the avifauna, particularly as regards the status of several species endemic to the region.

Since late 1989 we have made a number of visits to the foothills and adjacent lowlands of the middle Magdalena valley in the departments of Caldas, Cundinamarca, Boyacá and Tolima, in the course of which we have obtained new data on the status or distribution of some 75 species, as compared with the information in Hilty & Brown (1986), the most recently published summary. Most of our data were obtained at the following sites (dates and observers in parentheses):

a) Norcasia, Caldas (5°34′N, 74°54′W)—secondary and relict, disturbed primary forest on steep slopes overlooking the Río La Miel, in the vicinity of the CHEC construction camp above the site of a proposed hydroelectric project, *ca.* 300–500 m asl (9–11 Dec 1989—LR & B. Ortiz; 1–8 Oct 1994—FGS).

b) Tasajos, Municipality of Samaná, Caldas (5°29′N, 74°57′W)—disturbed relict forest and secondary woodland along the Río La Miel and adjacent ridges; second-growth scrub, pastures and scattered groves on slopes, 500–750 m asl (12 Dec 1989, 1–4 Jun 1990—LR & B. Ortiz; 16–19, 24–25 Mar 1994—FGS).

c) La Victoria, Caldas (5°25′N, 74°55′W)—most observations made in the watershed reserve of El Boquerón, on steeply-sloping terrain on a bluff overlooking the town, covered by tall but disturbed forest and old second-growth woodland, 850–1,020 m asl; also in the forested gorge of the Río Guarinó just S of town at 650–800 m asl (12–14 Dec 1989—LR & B. Ortiz; 29–31 May 1990—FGS, LR & B. Ortiz; 20–24 Mar 1994—FGS).

d) Guadualito, Municipality of Yacopí, Cundinamarca (5°33′N, 74°20′W)—remnant forest patches on hilltops, especially Loma Colorada, 1,150–1,220 m asl, and on the higher ridge of Fila Chapón (1,400–1,500 m asl, as well as second-growth woodland and scrub on steep slopes (25–29 Oct, 4–5 Nov 1995—FGS & A. Rodríguez).

e) El Vergel, Municipality of La Victoria, Boyacá (5°35′N, 74°17′W)—a large area of secondary and heavily disturbed remnant forest with patches of low second growth and small cultivated areas, on steep slopes overlooking the Quebrada Carros, 740–850 m asl (30–31 Oct 1995—FGS & A. Rodríguez).

f) Monte del Diablo, vereda Gramales, Municipality of La Victoria, Boyacá (5°38′N, 74°18′W)—a large (*ca.* 400 ha) patch of relatively lightly disturbed remnant forest, mostly on steep-sided ridges, long used by local residents as a hunting preserve, 700–880 m asl (1–3 Nov 1998—FGS & A. Rodríguez).

g) Puerto Romero and vicinity, Municipality of Puerto Boyacá, Boyacá (5°51′N, 74°21′W)—patches of remnant gallery forest at Hacienda Balcones, and pastures with scattered trees, scrub, and a tree-bordered stream near the Techint pipeline construction camp on flat to gently rolling terrain at the foot of the Serranía de las Quinchas, a small spur of the Eastern Andes jutting N into the Magdalena valley, 350–410 m asl (20–23 Sep 1996—CIB & A. Rodríguez; 19–24 Apr 1997—FGS; 23–27 Sep, 2–3 Oct 1997—FGS & CIB).

h) Vereda La Fiebre, Municipality of Puerto Boyacá, Boyacá (5°52′N, 74°20′W)—a steep-sided valley in the foothills of the Serranía de las Quinchas; lightly disturbed primary forest on steep ridges and the upper slopes, secondary woodland, scrub, cultivated areas and pastures on the valley floor and gentler slopes; also a patch of disturbed forest on a ridge overlooking the adjacent watershed of the Quebrada la Cristalina, 450–750 m asl (17–19 Sep 1996—CIB

& A. Rodríguez; 20–24 and 27–28 Apr 1997—FGS; 23–27 Sep, 2–3 Oct 1997—FGS & CIB).

i) La Grilla (Puesto Zipa), Municipality of Otanche, Boyacá (5°49′N, 74°18′W)—very wet, lightly to moderately disturbed cloud forest, tall secondary woodland bordering pastures, rustic coffee plantations, mostly on steep slopes on the crest of the Serranía de las Quinchas, 1,300–1,500 m asl (25–26 Sep 1996—CIB & A. Rodríguez; 25–26 Apr 1997—FGS; 28 Sep–1 Oct 1997—FGS & CIB; 3–6 Dec 1998—FGS).

These and other localities mentioned in the text are illustrated in Fig. 1.

We conducted visual and auditory observations and mist-netting at all sites and made a limited number of tape recordings at La Victoria, Guadualito, Monte del Diablo, La Fiebre and La Grilla; several specimens were collected with a shotgun at Guadualito, El Vergel, Monte de Diablo, La Fiebre and La Grilla. A complete list of species recorded in the Guadualito–El Vergel–Monte del Diablo area is given by Stiles & Rodríguez (1995) and a similar list for Puerto Romero–Serranía de las Quinchas will be published elsewhere (Stiles & Bohórquez, in prep.). All specimens mentioned are housed in the collection of the Instituto de Ciencias Naturales in Bogotá except several marked (J), which are in the collection of the Pontificia Universidad Javeriana in Bogotá.

GREAT TINAMOU *Tinamus major*

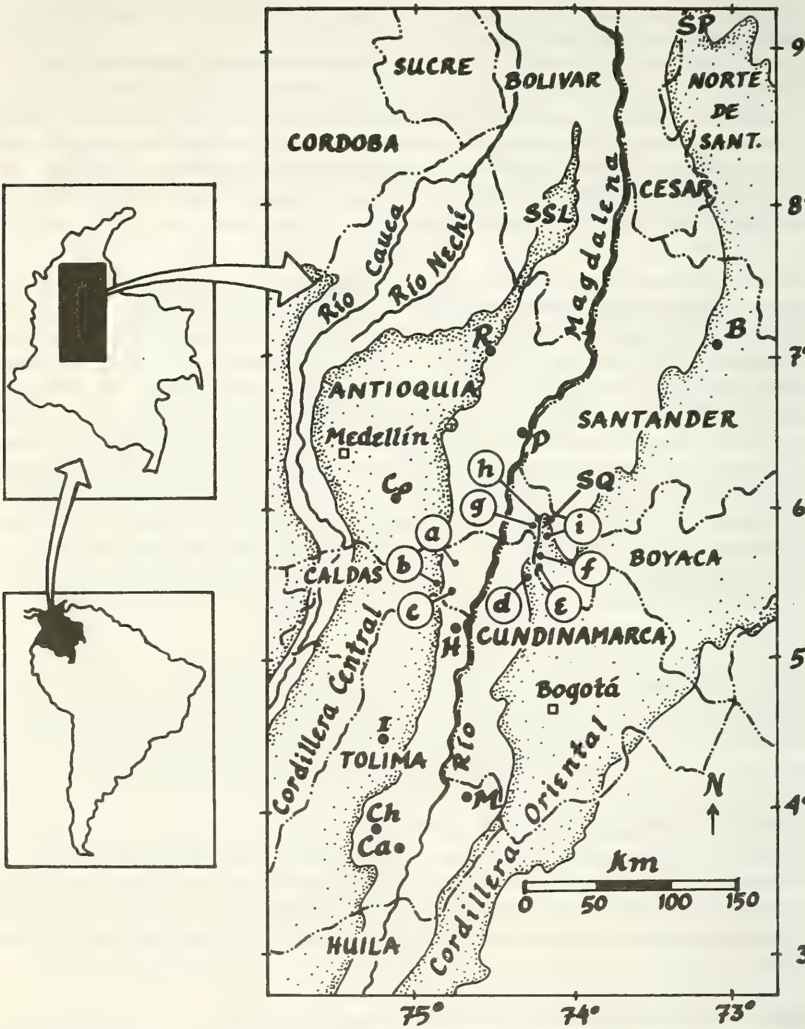
The deep, mellow trilled song of this species was heard several times at dawn on 25–27 September 1997 in forests in the upper part of vereda La Fiebre; the species is well known to local hunters. Not previously recorded S or E of the foothills of the Serranía de San Lucas.

RUFESCENT TIGER-HERON *Tigrisoma lineatum*

Single adults (possibly the same individual) were observed on 2 and 3 October 1997 in gallery woodland along Quebrada La Fiebre and in a small stream adjoining gallery woodland near the Techint camp, respectively. Previously recorded S to Puerto Berrío in the Magdalena valley.

BARE-FACED IBIS *Phimosus infuscatus*

Observed several times in the flat alluvial plain of the Río Magdalena N of Honda, including a flock of *ca.* 35 W of Puerto Romero on 22 September 1997; FGS observed a similar flock near Castilla, S Tolima on 21 October 1993. The species is now widely distributed in the middle Magdalena valley, chiefly in rice-growing areas where it prefers flooded fields. Recorded S only to NW Santander by Hilty & Brown (1986), although they overlooked a 1967 record for Puerto Salgar, Cundinamarca, on the Río Magdalena just N of Honda by Olivares (1969): the species has evidently expanded its range S, probably at least to N Huila, with the removal of the forests in the middle Magdalena valley.


SP
SUCRE
BOLIVAR
NORTE DE SANT.
CORDOBA
CESAR
SSL
Río Cauca
Río Nechí
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Medellín
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CALDAS
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CUNDINAMARCA
Bogotá
Cordillera Central
I
TOLIMA
Río
Cordillera Oriental
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0
50
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150
HUILA
9°
8°
7°
6°
5°
4°
3°
75°
74°
73°

Figure 1. The middle Magdalena valley region, central Colombia, showing important localities mentioned in the text. Circled letters: major study sites (see text). Other localities, listed roughly N to S: SP=Serranía de Perijá; SSL=Serranía de San Lucas; R=Remedios; B=Bucaramanga; P=Puerto Berrío; Co=Cocorná; SQ=Serranía de las Quinchas; H=Honda; I=Ibagué; M=Melgar; Ch=Chaparral; Ca=Castilla. The approximate location of the 1,000 m contour line (with stippling) is indicated to define the major Andean cordilleras.

PLUMBEOUS KITE *Ictinia plumbea*

Although this species is very widely distributed in Colombia, there are few records for the Magdalena valley, so a breeding record is of interest: a pair feeding a recently-fledged juvenile in pasture trees beside a patch of gallery woodland *ca.* 1 km N Puerto Romero, 21–23 April 1997.

WHITE HAWK *Leucopternis albicollis*

An adult of the race *williaminae* was observed perched at close range on a bare snag in forest canopy in the upper part of the La Fiebre watershed on 26 September 1997; the black back with white flecks was clearly visible. Possibly the same individual was seen and heard on several occasions during the preceding and following days. This subspecies had not been recorded S of the Serranía de Perijá or E of the upper Sinú valley W of the Río Cauca.

BLACK-CHESTED (BARRED) HAWK *Leucopternis princeps*

On 22 April 1997 FGS recovered a dead adult male with small testes and in heavy moult from a small creek at 650 m in the upper La Fiebre watershed; the specimen was saved, but the cause of death was not determined (it had not been shot). A soaring bird was seen and heard on 1 October 1997 near La Grilla. The only previous record for the western slope of the Eastern Andes was in N Santander (*ca.* 7°20′N).

BLACK HAWK-EAGLE *Spizaetus tyrannus*

Heard and seen on several occasions at La Victoria in March 1994, El Vergel and Monte del Diablo in October–November 1995, La Fiebre in April and October 1997, and La Grilla on 30 September 1997; usually located by its distinctive far-carrying call while soaring. Apparently unrecorded previously on the W slope of the Eastern Andes, or in the Magdalena valley S of the Serranía de San Lucas.

BARRED FOREST-FALCON *Micrastur ruficollis*

This species' distinctive, chanting 'song' was heard at dawn on 29 and 30 September 1997 in broken forest at La Grilla, and FGS briefly observed an adult in forest understorey along a ridgetop on 1 October 1997. Not previously recorded anywhere in the Magdalena valley, nor on the W slope of the Eastern Andes S of the Serranía de Perijá.

MARBLED WOOD-QUAIL *Odontophorus gujanensis*

The distinctive 'corcovado' song of this species was heard repeatedly in the mornings at La Grilla in September 1997, and on 1 October FGS observed at close range a covey of 4+ birds in forest understorey on a steep-sided ridge. No previous records for the W slope of the Eastern Andes S of N Santander; the elevation also is unusually high for the species, which Hilty & Brown (1986) record only to 1,200 m. Interestingly, at lower elevations in the Serranía de las Quinchas, as at La Fiebre, a second species of *Odontophorus* with a very different song (*erythrops*?) was heard frequently in April and twice each in September 1996 and 1997 but not seen.

GREY-CHESTED DOVE *Leptotila cassinii*

A bird was observed at very close range in forest understorey at 700 m in the upper La Fiebre watershed on 27 April 1997 by FGS, who also heard songs of a *Leptotila*, not *verreauxi* and presumably this species, on the previous day in the same area. Not previously recorded S of Puerto Berrío nor E of the Río Magdalena.

BLACK-AND-WHITE OWL *Ciccaba nigrolineata*

A single adult was heard calling, located and examined by flashlight at 22:00 h on 3 October by FGS in gallery woodland and adjacent pasture trees near Techint. No previous records of this rarely-reported owl between S Bolívar and S Tolima in the Magdalena valley.

CRESTED OWL *Lophostrix cristata*

The distinctive growling call of this owl was heard clearly on the evening of 5 Dec 1998 from tall trees in a forested ravine at La Grilla, but due to the dense vegetation and precipitous terrain FGS was unable to see the bird. The only previous record of this owl in the entire Magdalena Valley region was from the Lebrija valley near Bucaramanga.

SHORT-TAILED NIGHTHAWK *Lurocalis semitorquatus*

FGS saw a single bird coursing at treetop height over a treefall clearing on a forested ridge at Monte del Diablo at dusk on 2 November 1995, and one or two birds over a narrow ravine in the upper La Fiebre watershed at dusk on 24 September 1997; the short tails and batlike flight were very evident, and in both cases the birds were giving the species' characteristic vocalization of repeated, querulous 'wick' notes (cf. Stiles & Skutch 1989). No previous records for the W slope of the Eastern Andes, nor for the Magdalena valley region S of the W base of the Sierra Nevada de Santa Marta (*ca.* 10°N). Previous records for the Eastern Andes refer to the larger, more richly-coloured highland form *rufiventris* which has a very different voice (FGS, pers. obs.) and is now often considered a separate species (e.g. Stotz *et al.* 1996).

SHORT-TAILED SWIFT *Chaetura brachyura*

This distinctive swift had not been previously recorded S of *ca.* 7°N in the Magdalena valley, but FGS observed small numbers repeatedly at Guadualito and Monte del Diablo in October–November 1995; FGS and/or CIB regularly observed single birds, pairs or occasional groups of up to 5 on all visits to La Fiebre.

WHITE-TIPPED SWIFT *Aeronautes montivagus*

At Hacienda El Silencio, *ca.* 12 km NW of Ibagué, Tolima, FGS and LR observed *ca.* 5 birds of this species in a mixed flock of swifts foraging low over a mountain ridge above the Río Combeima at *ca.* 1,700 m, on 28 March 1993. In the entire Magdalena valley region there is only one previous record from near Bucaramanga, and none from either slope of the Central Andes.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

FGS observed a pair of this striking swift in a mixed flock of swifts and swallows foraging over pastures and coffee plantations at Gramales, *ca.* 5 km S Monte del Diablo on 1 November 1995, apparently the first record for the entire Magdalena valley region.

LONG-BILLED HERMIT *Phaethornis longirostris* (species name follows Hinkelmann 1996)

FGS found this species common at Norcasia and observed a lek there; observed infrequently at Tasajos by LR and FGS; common to abundant in the La Fiebre watershed during all visits by FGS and CIB; specimens collected at Norcasia and La Fiebre. Previously recorded S to Puerto Berrío.

BAND-TAILED BARBTHROAT *Threnetes ruckeri*

Common at El Vergel and Monte del Diablo, uncommon at Tasajos, Norcasia and La Victoria; abundant at La Fiebre, rare at La Grilla. Specimens collected at Tasajos, Norcasia and La Fiebre by FGS and CIB. Previously recorded S to Puerto Berrío.

VIOLET-HEADED HUMMINGBIRD *Klais guimeti*

An adult female not in breeding condition, mist-netted and collected at La Grilla on 30 September 1997, represents the first record for the W slope of the Eastern Andes as well as for the entire Magdalena valley region; a second female, in heavy moult, was netted and released at this site on 4 December 1998.

GREEN THORNTAIL *Popelairia conversii*

A female was observed at length by FGS at La Victoria (El Boquerón) on 22 March 1994 as it gleaned tiny ants (?) from the bare twigs of a small dead roadside tree adjacent to secondary forest. In addition, Peter G. Kaestner (pers. comm.) observed an adult male near the lower edge of the forest reserve above town in 1989. On 3–5 December 1998, FGS observed several males interacting in treetops at forest edge at La Grilla, and a male in fresh plumage and with enlarged testes was collected on 4 December 1998. Not previously definitely recorded E of the Western Andes, though Olivares (1969) stated vaguely that there were "indications that it had been collected in Yacopí".

TODY MOTMOT *Hylomanes momotula*

An adult was observed closely as it perched quietly about 2 m up in forest understorey by the Río La Miel at Tasajos on 2 June 1990 by LR and B. Ortiz. First record for the Magdalena valley; previously recorded E only to the lower Cauca valley.

RUFOUS MOTMOT *Baryphthengus martii*

Fairly common in the more heavily forested parts of the La Fiebre watershed, with several sightings and tape recordings in April and September 1997. Although recorded S to Honda on the W side of the Río Magdalena, this is apparently the first record E of the river, in the foothills of the Eastern Andes.

BROAD-BILLED MOTMOT *Electron platyrhynchum*

Heard and seen on several occasions in September–October 1997 in forested parts of the upper La Fiebre watershed. No previous records S of Remedios nor E of the Río Magdalena.

WHITE-WHISKERED PUFFBIRD *Malacoptila panamensis*

Uncommon in the forested upper part of the La Fiebre watershed, where FGS collected a male in April and a female in September 1997; CIB also mist-netted one at La Cristalina in September 1996. No previous records S of Remedios nor E of the Río Magdalena.

WHITE-FRONTED NUNBIRD *Monasa morphoeus*

Another species previously unrecorded E of the Río Magdalena, where we found it to be fairly common in the upper La Fiebre watershed in April and September 1997.

WHITE-MANTLED BARBET *Capito hypoleucus*

This endemic species was considered endangered by Collar *et al.* (1992), and Graves (1987) named the southern, Magdalena valley population *extinctus* in the belief that the extensive forest destruction in the middle Magdalena region had resulted in its extirpation. With B. Ortiz, LR and FGS found several visiting fruiting *Cupania* trees in the forest reserve above La Victoria in May 1990, but FGS failed to record it there in March 1994 (when these trees were not fruiting). On the former date several were also observed in the Río Guarinó gorge above La Victoria. However, in April and September–October 1997 FGS and CIB found the species to be common in the forested upper parts of the La Fiebre watershed and abundant at La Grilla. At the latter locality FGS observed a pair attending a nest on 27 April 1997, and in September–October we observed groups of 4–6 several times daily, visiting a variety of fruiting trees, and obtained tape recordings and four specimens with small gonads and either moulting or in fresh plumage. On 4–5 December 1998, five birds were netted, colour-ringed and released at this site. The Serranía de las Quinchas evidently supports a healthy population that merits more detailed study.

CHESTNUT/BLACK-MANDIBLED TOUCAN *Ramphastos swainsonii/ambiguus*

These large toucans were common and vocal in the upper parts of the La Fiebre watershed during our visits in 1996 and 1997, but FGS did not find them at Guadualito or Monte del Diablo; Olivares (1969) suggested that they had been extirpated in Cundinamarca (referring to the subspecies *abbreviatus* of the W slope of the Eastern Andes rather than the east-slope *ambiguus*, although he used the latter name). All individuals observed closely at La Fiebre had pale green or yellow–green facial skin, with the base and gonys of the mandible more or less strongly suffused with chestnut or maroon. The mandibles of these individuals were darker than those of 'typical' *swainsonii* but hardly solid black, as in nominate *ambiguus* and at least the southern populations of *abbreviatus*. 'True' *swainsonii* has been recorded from the Pacific slope E to the Remedios area (Hilty & Brown 1986), while birds from the Puerto Berrío area, with mandibles apparently resembling those of the La Fiebre birds, have been variously assigned to *swainsonii* or *abbreviatus*, or have been considered to represent hybrids or intergrades (Haffer 1974). Tape recordings of La Fiebre birds sound essentially identical to those made by FGS of *swainsonii* in Costa Rica and Chocó, Colombia. Most recent treatments (e.g. Hilty & Brown 1986) split *swainsonii* from *ambiguus* (including *abbreviatus*), but Haffer (1974) lumped *swainsonii* into *ambiguus*, evidently because of the apparent intergradation between the former and *abbreviatus*. We agree with Haffer to the extent that we consider *swainsonii* and *abbreviatus* to be conspecific, but we feel that *ambiguus* itself, which differs strikingly in soft-part colours and slightly in size (larger) and voice (cf. Hardy *et al.* 1996) might best be considered a separate (allo)species. Although more study, especially of *ambiguus*, is clearly called for, we conclude that if two species were to be recognized, *abbreviatus* should be considered a race of *swainsonii*, not *ambiguus*.

CINNAMON WOODPECKER *Celeus loricatus*

Observed twice at Monte del Diablo by FGS, and found to be fairly common in the forested upper La Fiebre watershed by FGS and CIB; not previously recorded S of the vicinity of Bucaramanga in the Magdalena valley.

STRONG-BILLED WOODCREEPER *Xiphocolaptes promeropirhynchus*

Several birds were heard calling at dawn and seen in the upper La Fiebre watershed in September 1997 by FGS and CIB; one specimen. Although widely distributed in the Andes, this species is rare below 1,500 m, at least on the W slope where its centre of abundance is above 2,000 m (Hilty & Brown 1986), thus a population at such a low elevation is of interest.

BARRED WOODCREEPER *Dendrocolaptes certhia*

At least two birds were observed singing at dawn on 26 September 1997 on one forested ridge of the upper La Fiebre watershed by FGS and CIB; the song, a loud and rather strident series of descending clear whistles similar to the description in Hilty & Brown (1986), seemed to FGS to possess a much less querulous quality than that of the Costa Rican population (cf. Stiles & Skutch 1989). Previously not recorded S of Bucaramanga in the Magdalena valley.

BLACK-STRIPED WOODCREEPER *Xiphorhynchus lachrymosus*

Fairly common at Monte del Diablo and in the upper La Fiebre watershed; not previously recorded S of Remedios nor E of the Río Magdalena.

RUDDY FOLIAGE-GLEANER *Automolus rubiginosus*

Observed twice and tape-recorded at La Grilla on 29 and 30 September 1997, one specimen collected. Since the collection of the type specimen of the race *sasaimae* by Chapman at Sasaima, Cundinamarca over 80 years ago, the species has apparently gone unrecorded on the W slope of the Eastern Andes (cf. Olivares 1969); our specimen appears to represent the second known for this race.

CHECKER-THROATED ANTWREN *Myrmotherula fulviventris*

Uncommon at El Vergel, fairly common at Monte del Diablo and in the forested upper La Fiebre watershed; specimens from El Vergel and La Fiebre, one also mist-netted at La Grilla. Previously unrecorded S of Remedios or E of the Río Magdalena.

WHITE-FLANKED ANTWREN *Myrmotherula axillaris*

Very common at Monte del Diablo, uncommon at El Vergel and in the upper La Fiebre drainage; specimens from Monte del Diablo and La Fiebre. Often in mixed flocks with the preceding species. Not previously recorded S of Bucaramanga in the Magdalena valley.

SLATY ANTWREN *Myrmotherula schisticolor*

Fairly common at La Grilla, where we mist-netted three and collected two in September 1997; a pair also observed briefly by FGS on Fila Chapón above Guadualito on 4 November 1995. Apparently the only previous record for the W slope of the Eastern Andes is a specimen collected by Chapman at La Agaudita, Cundinamarca, over 80 years ago.

STREAKED ANTWREN *Myrmotherula surinamensis*

Observed and netted at Tasajos in June 1990 by LR and B. Ortiz; a pair regularly seen in riverside trees in the same area in March 1994 by FGS, who also recorded it in tall scrub at Guadualito on 27 October 1995. Previously recorded S only to Bucaramanga in the Magdalena valley.

DOT-WINGED ANTWREN *Microrhopias quixensis*

Very uncommon at El Vergel, Monte del Diablo and La Fiebre, where FGS noted pairs accompanying mixed-species flocks along the borders of forest clearings. Not previously recorded S of Remedios nor E of the Río Magdalena.

CHESTNUT-BACKED ANTBIRD *Myrmeciza exsul*

Fairly common in old second-growth woodland in the La Fiebre watershed; two specimens with enlarged gonads collected on 28 April 1997. The southernmost previous record in the Magdalena valley was Puerto Berrío.

BICOLORED ANTBIRD *Gymnopithys leucaspis*

At least three attended an army ant raid at Monte del Diablo on 2 November 1995; one specimen. Previously unrecorded S of Remedios or on the E side of the Río Magdalena.

BLACK-FACED ANTTHRUSH *Formicarius analis*

Heard on several occasions at Monte del Diablo; uncommon to fairly common in primary and old secondary forest in the La Fiebre watershed, one specimen with enlarged gonads collected on 28 April 1997. Previously recorded S to Puerto Berrío.

STREAK-CHESTED ANTPITTA *Hylopezus perspicillatus*

FGS heard this species on several occasions and glimpsed one bird briefly in forest understorey at Monte del Diablo, 2–3 November 1995. Previously recorded S to Bucaramanga.

CHESTNUT-CROWNED GNATEATER *Conopophaga castaneiceps*

A male with enlarged gonads collected on 26 April 1997 at La Grilla apparently represents the first record for the W slope of the Eastern Andes N of the head of the Magdalena valley (*ca.* 2°N).

BLUE-CROWNED MANAKIN *Pipra coronata*

Several seen and mist-netted, a pair with enlarged gonads collected in ridgetop forest at Tasajos, 19 March 1994. Previously recorded S only to Remedios.

ANTIOQUIA BRISTLE-TYRANT *Phylloscartes lanyoni*

This endemic, threatened species (Collar *et al.* 1992) was uncommon at El Vergel, where FGS collected a male with gonads not enlarged on 31 October 1995; common and tape-recorded at Monte del Diablo where birds were in pairs, usually accompanying mixed-species flocks in the middle levels of the forest, sallying for flying insects or to snatch prey from leaf surfaces, using hanging vines as preferred perches. These are the first records of this species from E of the Río Magdalena. FGS also saw one in the forest reserve above La Victoria on 21 March 1994, and Bret M. Whitney also found the species *ca.* 10 km W of La Victoria (evidently near Tasajos) and collected a specimen (unfortunately too destroyed by shot to sex) on 25 June 1992. Surprisingly, we did not encounter this species in the Serranía de las Quinchas.

OLIVACEOUS FLATBILL *Rhynchocyclus olivaceus*

Uncommon at El Vergel, Monte del Diablo and in the La Fiebre watershed, where FGS observed a nest under construction on 28 April 1997. Specimen taken at El Vergel and La Fiebre. Not previously recorded S of Bucaramanga.

YELLOW-MARGINED FLYCATCHER *Tolmomyias assimilis*

Fairly common in forest canopy at La Fiebre and La Cristalina, where CIB and A. Rodríguez took a specimen on 18 September 1996. There appear to be no previous published records for the Magdalena valley, but in the ICN collection are two specimens taken at Cocorná on the W side of the valley in E Antioquia.

BLACK-TAILED FLYCATCHER *Myiobius atricaudus*

Uncommon at El Vergel where FGS collected a female with a small ovary on 31 October 1995, and in the La Fiebre watershed, where a male with small testes was collected on 25 September 1997. Previously recorded only W of the Río Magdalena and S to Puerto Berrío.

SULFUR-RUMPED FLYCATCHER *Myiobius barbatus*

On two occasions on 2 November 1997, single birds were observed closely by FGS as they accompanied mixed-species flocks in the upper understorey of forest at Monte del Diablo. Not previously recorded S of the vicinity of Bucaramanga in the Magdalena valley.

BLACK-CAPPED PYGMY-TYRANT *Myiornis atricapillus*

One bird was observed at close range by FGS and CIB as it foraged in roadside trees adjoining old secondary woodland at La Fiebre on 24 September 1997. This easily overlooked species had not been recorded previously S or E of the W side of the Serranía de San Lucas.

CATTLE TYRANT *Machetornis rixosus*

Common in pastures and other open areas in the Puerto Romero–Techint area as well as between Puerto Boyacá and Honda, and S at least to S Tolima (Castilla). Previously recorded S only to S Bolívar, this is another open-country species that has apparently expanded its range southward following deforestation of most of the middle Magdalena valley.

LESSER KISKADEE *Philohydor lictor*

On 2 October 1997 FGS and CIB observed closely a pair in a scrubby wet pasture near the Techint construction camp. Evidently not recorded S of Remedios nor E of the Río Magdalena, this species may also have expanded its range S and W in the region following forest clearance.

BRIGHT-RUMPED ATTILA *Attila spadiceus*

Heard and seen regularly in the La Fiebre watershed (one individual mist-netted on 21 April 1997) and infrequently at La Grilla. Previously recorded S to Puerto Berrío.

WHITE-THIGHED SWALLOW *Neochelidon tibialis*

Observed in large numbers in the La Fiebre valley in September 1996 and September–October 1997, but absent in April 1997; possibly the species is migratory in this region. Previously recorded S only to Bucaramanga.

STRIPE-THROATED WREN *Thryothorus leucopogon*

Relatively common in dense vegetation along creeks inside forest in the upper La Fiebre drainage, where three specimens, a pair with enlarged gonads and a juvenile, were taken on 20 April 1997. Although Hilty & Brown (1986) adverted its possible presence in the Magdalena valley, there appear to be no previous confirmed records for this species E of S Córdoba.

BAY WREN *Thryothorus nigricapillus*

This species was recorded at Norcasia (specimen), La Victoria, Tasajos (specimen), El Vergel (netted) and Monte del Diablo; it had previously been found S only to S Bolívar in the Magdalena valley region.

SOOTY-HEADED WREN *Thryothorus spadix*

This species, nearly endemic to Colombia, was previously known S only to C Santander and the N boundary of Caldas. We found it to be fairly common at Tasajos (specimen), La Victoria (two specimens), Guadualito (two specimens), El Vergel and Monte del Diablo.

PALE-VENTED THRUSH *Turdus obsoletus*

A male with testes not enlarged was collected on 26 September 1997 in forest at 680 m in the upper La Fiebre watershed. This apparently represents the first record for the Magdalena valley N of the head of the valley in S Huila; the status (whether residents or migrants) and subspecific allocation of birds from this region remain to be determined.

TAWNY-FACED GNATWREN *Microbates cinereiventris*

Uncommon at Monte del Diablo (specimen) and in the upper La Fiebre forests (netted) and at La Grilla (specimen); in both areas usually seen with mixed-species flocks in forest understorey. Previously recorded S to Puerto Berrío.

YELLOW-BROWED SHRIKE-VIREO *Vireolanius eximius*

Given the paucity of previous records for this species in the Magdalena valley (cf. Olivares 1969, Hilty & Brown 1986), it seems worth emphasizing that we found it quite common at La Victoria, Guadualito, El Vergel, Monte del Diablo (specimen), La Fiebre and La Grilla and uncommon at Norcasia and Tasajos. Its green colouration and preference for the upper canopy render the species inconspicuous until its persistent song is learned; it is generally common wherever patches of remnant forest persist.

LESSER GREENLET *Hylophilus decurtatus*

Recorded by FGS at El Vergel and Monte del Diablo, and by FGS and CIB at La Fiebre; a specimen was taken on 19 September 1996 at La Cristalina by CIB and A. Rodríguez. Previously recorded S to the Bucaramanga area.

YELLOW ORIOLE *Icterus nigrogularis*

Fairly common at Techint and Puerto Romero, where FGS found a nest under construction in April 1997; FGS and LR have found it to be common at least as far S as Melgar, and FGS observed one or two individuals briefly near Castilla, S Tolima on 21 October 1993. Hilty & Brown (1986) record it S to Puerto Berrío, but they evidently overlooked a 1967 record for Puerto Salgar, just N of Honda, by Olivares (1969); apparently this species is another that has expanded its range S following forest clearance.

GREY-THROATED WARBLER *Basileuterus cinereicollis*

This species, restricted to the Eastern Andes and the Serranía de Perijá in Colombia and adjacent Venezuela, was considered "near-threatened" by Collar *et al.* (1992). It is therefore worth noting that we found it fairly common during all visits to La Grilla in understorey of forest and adjacent tall second growth, collecting a female with a granular ovary on 29 September 1996, an immature male on 26 April 1997 and a male with small testes on 25 September 1997.

FULVOUS-VENTED EUPHONIA *Euphonia fulvicrissa*

This species was common at Tasajos (netted), La Victoria and La Fiebre, where a nest under construction was noted by FGS on 24 April 1997, and uncommon at Monte del Diablo. Previously recorded S only to Remedios and Bucaramanga.

TURQUOISE DACNIS-TANAGER *Pseudodacnis hartlaubi*

This endemic species, considered threatened by Collar *et al.* (1992), had been recorded only in three widely separated areas of the Colombian Andes, the closest being W Cundinamarca (W of Bogotá). FGS and CIB observed closely an adult male actively gleaning insects in the canopies of several *Albizzia carbonaria* trees along forest edge at 1,330 m at La Grilla on 28 September 1997; a short while later on the same date a female was observed among various other tanagers and barbets eating fruit of a large *Coussapoa* tree, also at forest edge. An adult male was observed briefly on 4 December 1998, and an immature female netted and collected the following day in the same area. Although these were our only observations, given the generally good state of the habitat at La Grilla, it is possible that the Serranía de las Quinchas harbours an important population of this rare species.

YELLOW-BACKED TANAGER *Hemithraupis flavicollis*

This species was fairly common at Tasajos, La Victoria (specimen), Monte del Diablo and La Fiebre, where a pair was observed building a nest in the upper canopy on a forested ridge at 670 m on 27 September 1997. Previously recorded S to Bucaramanga in the Magdalena valley.

SOOTY ANT-TANAGER *Habia gutturalis*

Because this endemic species was considered "near-threatened" by Collar *et al.* (1992), it is worth noting that we found it common to abundant at La Victoria (two specimens), Guadualito, Monte del Diablo, El Vergel and La Fiebre (three specimens), and fairly common at Tasajos and Norcasia. It occurs in both primary and older secondary forest.

TAWNY-CRESTED TANAGER *Tachyphonus delattrii*

Found by LR, FGS and B. Ortiz frequently in flocks of up to *ca.* 12 in the forest reserve above La Victoria in May 1990, but only seen once in March 1994; may move locally, perhaps into the adjacent Guarinó gorge. Previously recorded S to Remedios.

WHITE-SHOULDERED TANAGER *Tachyphonus luctuosus*

Previously recorded S to Honda in the Magdalena valley, but FGS found it fairly common in remnant patches of forest and adjacent shaded coffee plantations at El Limón, *ca.* 5 km SW of Chaparral, Tolima, collecting a male there on 23 October 1993. The species was also common at El Vergel, Monte del Diablo, Tasajos, La Victoria and La Fiebre.

DUSKY-FACED TANAGER *Mitrospingus cassinii*

Fairly common at Tasajos, where FGS took two specimens on 18–19 March 1994; several also seen in the Río Guarinó gorge near La Victoria on 30 May 1990 by FGS, LR and B. Ortiz. These are the first records for the Magdalena valley, the species previously having been recorded E only to the Río Nechí.

BLUE-BLACK GROSBEAK *Cyanocompsa cyanoides*

Locally common in forest understorey and adjacent old second growth at Tasajos, La Victoria (specimen), Guadualito (netted), El Vergel (specimen), Monte del Diablo, La Fiebre (specimen); uncommon at La Grilla (netted). LRS and B. Ortiz also collected a specimen (J) near Marquetalia, Caldas (5°23′N, 75°4′W) on 15 December 1989. Previously recorded only S to Remedios.

LINED SEEDEATER *Sporophila lineola*

A pair of this species was seen repeatedly by FGS in the vicinity of the Techint camp between 18 and 28 April 1997 in the company of numerous other seedeaters, especially Ruddy *S. minuta*. The male's broad white pileal stripe clearly identified it as this species—not previously recorded W of the Andes—rather than the expected Lesson's Seedeater *S. bouvronides*.

LARGE-BILLED SEED-FINCH *Oryzoborus crassirostris*

FGS observed a pair of this species repeatedly in scrubby pastures near the Techint camp in April 1997; he also collected a moulting male (J) on 5 June 1990 in a scrubby field at Melgar, Tolima. Not previously recorded S of S Cesar in the Magdalena valley, this is probably another species that has expanded its range S with deforestation. Although we have never found *O. crassirostris* numerous at any site, we do not agree with Collar *et al.* (1992) in considering it to be "near-threatened".

SAFFRON FINCH *Sicalis flaveola*

Because Hilty & Brown (1986) do not record it S of about 8°N in the Magdalena valley region and Olivares (1969) records for Cundinamarca only a single vagrant occurrence in Bogotá, we note that the species has evidently expanded its range S in recent years and is now numerous throughout the Magdalena valley at least as far S as S Tolima (Castilla, Chaparral), ascending regularly to (and presumably breeding, at least locally) in the Sabana de Bogotá at *ca.* 2600 m. We recorded it commonly at Techint, Puerto Romero and La Victoria in the present study, and three specimens (J) were collected by FGS at Melgar on 4–5 June 1990.

Concluding remarks

The records presented here mostly fall into two broad classes: forest species previously unrecorded in the Magdalena valley or not recorded so far S and/or W therein, or open-country species that have evidently expanded their distributions S in response to the deforestation of the middle part of the valley. The former group of records highlights the paucity of field work in this region in recent decades, as well as the importance of patches of remnant forest for the conservation of a number of endemic or poorly-known species. In particular, the Serranía de las Quinchas, with essentially the only well-preserved cloud forest and the largest block of lowland wet forest in the region, emerges as an important area for further study and a strong candidate for protective measures. The Río Ermitaño watershed in the interior of the Serranía is of difficult access (we have not yet been able to visit this area) but contains a block of some 50,000 ha of relatively pristine humid forest which, according to local hunters, still harbours 'paujiles'—presumably *Crax alberti*, whose situation is considered critical by Collar *et al.* (1992)—and possibly other endemics of the region that we did not record at La Fiebre or La Grilla (e.g. *Clytoctantes alixii*, *Phylloscartes lanyoni*). The second block of records highlights the ability of many open-country species to expand their ranges rapidly when forest barriers are removed, as has also been noted in other areas of the Neotropics like Costa Rica (Stiles & Skutch 1989).

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New and less known birds from Libya

by Bruno Massa

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Birds of Libya are less well known than those living in other north African countries. Since Bundy's (1976) review, few papers on the birds of Libya have been published: Misonne (1973), Willcox & Willcox (1978), Cowan (1982, 1983, 1985), Meininger *et al.* (1994a, 1994b, 1996). Between 4 and 16 April 1998, I visited coastal Libya and the following are the most notable records among the 89 species observed during the return trip from the Tunisia-Libya to the Libya-Egypt frontier.

BLACK-SHOULDERED KITE *Elanus caeruleus*

One migrating W-E near New Al Hishah on 5 April. Previously not reported for Libya (Bundy 1976), but well known as breeding in Tunisia and Egypt.

LAPPET-FACED VULTURE *Torgos tracheliotus*

One pair between Tokrah and Tolmeita on 7 April; 1 individual larger, presumably the female, rested on a high tension pylon, the other flew over and performed a spectacular display, diving rapidly towards it and emitting a guttural whistle. Afterwards both soared together towards the Djebel el Akhdar, mountains of modest altitude, extensively wooded by *Juniperus phoenicea, Pistacia lentiscus, Arbutus parvari, Quercus calliprimos* and *Cupressus sempervirens*. The area is characterized by deep wadis and isolated hills, where sheep and goat grazing are widespread. According to Del Hoyo *et al.* (1994) this species in Africa lays in December-February, breeding both in steppes, savannas and woodland; considering their behaviour, the vultures observed by me may have been breeding in the area. Previous records for Libya are in Fezzan and refer to singles (Bundy 1976). The nearest populations live in Saudi Arabia and the Middle East (Del Hoyo *et al.* 1994).

HARRIERS *Circus* spp.

Contrary to what was reported by Bundy (1976), harriers seem to migrate commonly through Libya; altogether I observed *c.* 200 individuals of different species (12 *Circus aeruginosus*, 40 *Circus cyaneus*, 6 *Circus macrourus*, 68 *Circus pygargus*, and 65 unidentified), mostly migrating singly, all eastwards; according to my observations carried out in the Benghasi region, huge numbers of harriers fly over the sea to reach the island of Crete, where an important spring migration route has been recorded by Vagliano (1985).

LONG-LEGGED BUZZARD *Buteo rufinus*

One at Al Beyda on 7 April; 1 at Wadi el Kouf on 8 April. Djebel el Akhdar is probably one of the few areas of Libya where this species breeds, although there is no proof yet.

BONELLI'S EAGLE *Hieraaetus fasciatus*

One ad. observed next to its large nest in a narrow cave on a cliff of Wadi el Kouf on 8 April; this site lies in the only known breeding area of this species in Libya (Bundy 1976).

LESSER KESTREL *Falco naumanni*

27 pairs at Wadi el Kouf (2 breeding in nests of *Corvus corax*) on 8 April; 1 at Apollonia on 9 April; a small colony on sea cliffs at Tajura on 14 April. At Wadi el Kouf I found some nests with fledglings aged *c.* 15 days; allowing for 28 days incubation, laying must have occurred in late March, following arrival at the breeding sites in February, but the possibility of wintering is not excluded. Breeding in the Benghasi region has not been recorded by previous authors (Bundy 1976; Negro 1997).

LANNER FALCON *Falco biarmicus tanypterus*

One at Al Beyda on 7 April; one pair breeding in an old nest of *Corvus corax* at Wadi el Kouf on 8 April.

LAUGHING DOVE *Streptopelia senegalensis*

Pairs seen and breeding recorded in many towns and their neighbourhoods (Sabratah, Tripoli, Leptis Magna, Misratah, Sirt, Benghazi, Marada, Tokrah, Dernah, At Tamimi, Tobruk, Ajadabia). My observations confirm the expansion of this species through N Libya, already recorded by Meininger *et al.* (1994b, 1996).

BARN OWL *Tyto alba*

Eight fresh characteristic pellets of this species (together with two feathers), recently regurgitated from a nocturnal roost at Leptis Magna on 5 April, contained 10 skulls of *Gerbillus* sp. and *Rattus rattus*. Breeding in Libya has yet to be confirmed.

ALPINE SWIFT *Apus melba*

One active colony at Wadi el Kouf on 8 April. Djebel el Akhdar is the only area of Libya where this species breeds (Bundy 1976).

HOOPOE *Upupa epops*

One pair near New Al Hishah on 5 April; some between Sirt and Benghazi on 6 April; one pair at Benghazi on 6 April; some singing at Wadi el Kouf on 8 April; 2 at Dernah on 10 April; some near At Tamimi on 12 April; one 100 km W of Ajadabia on 13 April; 2 pairs at Sabratah on 15 April. Males singing on Djebel el Akhdar suggest that breeding there is likely.

HOOPOE LARK *Alaemon alaudipes*

5 males displaying between Tobruk and Ajadabia (70 km from Ajadabia) on 13 April. Meininger *et al.* (1994b) consider that it is likely to breed all along the south coast of Libya.

LESSER SHORT-TOED LARK *Calandrella rufescens*

One colony near At Tamimi on 10 April; one colony between Tobruk and At Tamimi on 12 April; many between Tobruk and Ajadabia on 13 April. Two of the above listed localities are along the coast of Benghasi region, where Bundy (1976) did not mention breeding.

CRAG MARTIN *Ptyonoprogne rupestris*

One colony at Wadi el Kouf on 8 April; 2 at Apollonia on 9 April. Benghasi region is the only area of Libya where this species breeds (Bundy 1976).

WREN *Troglodytes troglodytes*

Many singing at Wadi el Kouf on 8 April; three males singing at Cyrene on 9 April. According to Bundy (1976), Djebel el Akhdar is the only area of Libya where this species breeds, but it is probably expanding in some suitable coastal areas of the Benghasi region.

BLACK WHEATEAR *Oenanthe leucura*

3 pairs at Leptis Magna on 5 April, males displaying; 4 near New Al Hishah on 5 April. In Libya it has been recorded as breeding only on Djebel Nafusa (Tripolitania) (Bundy 1976).

SPECTACLED WARBLER *Sylvia conspicillata*

2 pairs (males singing from a bush of *Atriplex halimus*, 1 nest with 2 eggs just laid) in the salt marsh W of At Tamimi on 12 April. Breeding in Libya has not been previously confirmed (Bundy 1976).

SOUTHERN GREY SHRIKE *Lanius meridionalis*

Many pairs breeding between Sirt and Benghazi, particularly between Ben Jawwad and Ajadabia on 6 April; some pairs between Tokrah and Tolmeita on 7 April; some pairs near Dernah on 10 April, near At Tamimi on 10 April, at Tobruk on 10–11 April; some near Ajadabia and Ras Lanuf, and many pairs 50 Km E of Sirt on 13 April. I agree with Meininger *et al.* (1996), who consider its breeding range continuous along coastal Libya. According to Lefranc (1993) the diet of this north African species is chiefly insectivorous. In 40 pellets that I collected under three roosts near Dernah, the following percentage of prey items were found: 65% Coleoptera, Tenebrionidae (genera *Adesmia, Pimelia, Akis* and *Blaps*), 35% Coleoptera, Buprestidae (*Julodis onopordi*).

BROWN-NECKED RAVEN *Corvus ruficollis*

Some pairs breeding on pylons near Misratah, 1 nest on pylons every 8–10 km near New Al Hishah on 5 April; one pair between Ben Jawwad and Ajadabia, some pairs breeding on pylons near Marada on 6 April; 2 pairs between Tobruk and Ajadabia, some W of Ajadabia, and 2 at Ras Lanuf on 13 April. The high tension line with high pylons was built 5–6 years ago, giving an artificial breeding site to this desert species, which is now expanding northwards in the arid zones of coastal Libya, where it was absent in the past (Bundy 1976).

COMMON RAVEN *Corvus corax*

One pair in a nest near Al Beyda on 7 April; another pair in a nest at Wadi el Kouf on 8 April; one pair at Cyrene on 9 April' another at Tobruk on 11 April.

HOUSE SPARROW *Passer domesticus*

Some pairs breeding at Marada on 6 April, between Tobruk and Ajadabia on 13 April, and at Ras Lanuf on 13 April. These localities are outside of the known breeding range of this species in Libya (cf. Bundy 1976; Meininger *et al.* 1994b, 1996).

EUROPEAN SERIN *Serinus serinus*

Some males singing at Leptis Magna on 5 April, at Wadi el Kouf on 8 April, at Cyrene on 9 April, at Misratah on 14 April and at Sabratah on 15 April. Breeding in Libya was considered confined to Tripolitania; records from the Benghasi region show that this species is expanding in Libya, as observed in other Mediterranean areas.

LINNET *Carduelis cannabina*

Commonly seen at Sabratah, Homs, Leptis Magna, between Sirt and Benghazi, Al Beyda, Cyrene and Apollonia. Breeding of this species in Libya has been certainly overlooked.

CORN BUNTING *Miliaria calandra*

2 males singing at Al Beyda on 7 April; *c*. 50 pairs in the salt marsh E of At Tamimi on 10 April (one nest with 3 eggs); *c*. 80 pairs in the salt marsh W of At Tamimi on 12 April (one nest with 5 eggs). These are the first confirmed breeding records of this species in Libya.

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Notes on the reproductive behaviour and the nest of the Chestnut-bellied Euphonia (*Euphonia pectoralis*)

by Luiz dos Anjos & Karl-L. Schuchmann

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The Chestnut-bellied Euphonia (*Euphonia pectoralis*) is a tanager of southeastern South America, with its major distribution centred in the tropical lowland and montane evergreen forests of southeastern Brazil

(Meyer de Schauensee 1982, Isler & Isler 1987, Ridgely & Tudor 1989, Stotz *et al*. 1996).

Information on the reproductive biology of the species is based on only two nest records. These indicate that it has a breeding period during the southern spring and summer (nest construction: August, Paraguay, Bertoni 1919; nest with eggs: January, Brazil, Snethlage & Schreiner 1929).

On 6 March 1997 we found an active nest of *E. pectoralis* along a steep roadside (narrow edge of secondary forest next to primary forest) of the "Estrada da Graciosa," close to Morretes, Paraná, in the southern Brazilian Atlantic forest (48°55′W, 50°20′S) at an elevation of 355 m. Our attention was drawn to the nest when a male, perching for a short period in mid-level vegetation, flew directly to the well-camouflaged domed moss nest with a side entrance, elongated at the bottom with fine compact rootlets. It was situated in a dead branch of a mature laurel tree (Lauraceae), 4 m high amidst a bulk of smaller epiphytes (bromeliads, gesneriads, e.g., *Codonanthe* sp., tree peppers, *Peperomia* sp.).

The male spent 12 min silently sitting in the nest, probably incubating. On 23 March when one of us (LdA) returned to the site, the nest was abandoned. It was collected and deposited at the Zoological Museum of the Universidade Estadual de Londrina, Paraná, Brazil.

Nest measurements and description

Height 11 cm, width 10.5 cm. The cone-shaped attached plant material had an additional length of 11.5 cm. The side entrance, almost at the bottom of the nest and slightly elliptical in shape, was 2.5 cm high and 3.5 cm wide. The nest chamber, 0.5 cm deep and 5.5 cm in diameter, was lined with fine rootlets. The compact nest and the attached plant material consisted of moss with fine rootlets woven in.

The northeast nest entrance position was mostly shaded throughout the day, receiving sun only during a short period in the morning.

The nest contained no eggs, but some very small particles of whitish egg shells.

General remarks

Based on the two previous breeding records of the Chestnut-bellied Euphonia from Paraguay and Brazil (Bertoni 1919, Snethlage & Schreiner 1929), and on our observations from southeastern Brazil, a much longer duration of the reproductive period must be considered (August to March). Whether the eight month long breeding period of the Chestnut-bellied Euphonia is an exception within the genus or simply a matter of geographical, altitudinal and/or local conditions remains unclear. Other sympatric *Euphonia* species of the Brazilian Atlantic forest suggest a much shorter reproductive period from October to January (Isler & Isler 1987): *E. chalybea,* October; *E. musica,* January; *E. violacea,* October; *E. chlorotica,* November).

For *Euphonia* sp (Isler & Isler 1987) male participation in nest construction and brooding is not known. Our observation gives some evidence for male parental care. Euphonias usually place their nests in epiphytes closely attached to tree trunks or on lateral branches. Our record suggests the acceptance by *E. pectoralis* of suitable nest sites in the periphery of a tree if habitat requirements, e.g., the presence of epiphytes and appropriate height, are met.

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BOOKS RECEIVED

Grimmett, R., Inskipp, T. 1998. *Birds of the Indian Subcontinent*. Pp. 888, 153 colour plates by 12 artists, monochrome distribution maps. Christopher Helm/A & C Black. ISBN 0-7136-4004-9. £55. 24.5 × 18 cm.

Ali, S. & Ripley, S. D. (with contributions from Roberts, T. J.). 1998. *Handbook of the birds of India and Pakistan*, Vol. 9, Robins to wagtails. Second edition. Pp. 310, 10 colour plates; numerous line drawings, monochrome distribution maps. Oxford University Press/Bombay Natural History Society. ISBN 0-19-563695-3. £21. 24.5 × 16.5 cm.

In recent years India has, at least for Europeans, become an easily and fairly cheaply accessible destination for tourists. Its bird life is rich with many potentially confusing groups, e.g. pipits, warblers, laughingthrushes and babblers. The standard texts available for many years have been the many works by Salim Ali including, of course, the 10-volume *Handbook of the birds of India and Pakistan*, co-authored by Dillon Ripley.

This remains the most comprehensive text on the birds of this region. The revision of volume 9 (which first appeared in 1973) adheres to the original format, with in-depth descriptions of each species and subspecies, and sections detailing status, distribution and habitat, general habits, food, voice and breeding. A museum diagnosis includes measurements. Much remains the same as in the first edition of this volume but, where appropriate, distribution sections have been updated and new/revised taxa included. The list of references includes only three that post-date the first edition, indicating the limited nature of this revision.

Grimmett *et al*. detail 1,295 species, accepted up to 1996, in a single volume and follow the taxonomy adopted in *An annotated checklist of the birds of the Oriental Region*, which is based on that of Sibley & Monroe (1990). The style of the book follows that of other Helm Identification Guides, with an introductory section describing the organisation of the book, followed by extremely brief accounts of climate, main habitats and bird species, importance for birds, migration and conservation. Also included are lists of national and international organisations, with brief accounts of their activities, and a glossary of terms which relate to bird structure and plumage, among which are a few geographical terms.

Species descriptions concentrate on identification, in which age, sex and racial differences, and distinctions from similar species, are detailed. For the nightjars, larks and rosefinches useful keys are given; an extension of this system would have been helpful for some other more difficult groups. Voice (a section that the authors say was difficult to write) is described in some depth only where it is essential for field identification, and habits, habitat, breeding and distribution and status receive very brief treatment. Each species has a distribution map; these are necessarily small but all forms of hatching are barely visible, even with a magnifying glass.

The 153 colour plates, by 12 artists, inevitably vary in style but the majority are very good and show salient identification features. Where appropriate, sex, age and racial differences are shown and in some species (e.g. some warblers and pipits) fresh and worn plumages are illustrated. Raptors are particularly well displayed, showing many plumage variations, and views from above and below. Flicking through the pages gives a wonderful overview of the huge avian diversity of the Subcontinent.

This great diversity does present problems, however, in that any full treatment of the avifauna will inevitably be large. The Ali & Ripley ten volume *Handbook* (and its single "compact" edition) and the new Grimmett *et al*. guide address different audiences. The *Handbook* goes into greater detail in most areas, especially in aspects of biology, and is aimed at the specialist; despite the recent revision, however, it is now very dated. Grimmett *et al*.'s guide, on the other hand, is clearly targeted at the birder and superbly fills a long-vacant niche; my main criticism is that the introductory sections are far to brief to convey a realistic flavour of variation within the Subcontinent, even in an identification guide. But even as it stands, birders must be fit, for at over 2.2 kg this book will prove burdensome in any rucksack—and pockets are clearly out of contention!

Chris Feare

NOTICE TO CONTRIBUTORS

Papers are invited from Club Members or non-members, especially on taxonomic and distributional topics; descriptions of new species are especially welcome and may be accompanied by colour photographs. **Two copies** of manuscripts, typed on one side of the paper, **double spaced and with wide margins**, should be sent to the Editor, Prof. Chris Feare, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK. All contributions, **including *In Brief* articles**, should follow the style of main papers in this issue of the *Bulletin*. Where appropriate, authors are invited to submit half-tone photographs to illustrate their papers.

A contributor is entitled to 10 free offprints (16 if 2 or more authors) of the pages of the *Bulletin* in which his/her contribution, if one page or more in length, appears. Additional offprints or offprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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Only Members of the British Ornithologists' Union are eligible to join the Club, and to receive (postage free) four quarterly issues of the *Bulletin*, and the annual index, for an annual subscription of £12 (or U.S. $26). Applications, enclosing the annual subscription, should be made to the Hon. Secretary (address as below).

The 1999 List of Members, and addresses will again not be published with the *Bulletin* but copies are available, on application (with a remittance of **£2.00** to cover costs of production and postage), to the Hon. Secretary. Please advise the Hon. Secretary, without delay, of any address changes, or corrections, for despatch of the *Bulletin*.

E-mail addresses. In response to numerous requests, it is planned to include these details in **The 2000 List of Members.** Members wishing these to be added to their mailing address please inform the Hon. Secretary, by this means, (see below) as soon as possible.

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PAYMENTS

All amounts quoted are net and should be paid in £ sterling, if possible. Payments in other currencies must include a further £4 for UK bank charges (except for annual rates in US dollars, which are inclusive). All cheques or drafts should be made payable to the British Ornithologists' Club. If preferred, remittances may be made by bank transfer direct to the Club's bank account—Barclays Prime Account, Dale House, Wavertree Boulevard, Liverpool L7 9PQ, UK (Sort Code 20-00-87 Account No. 10211540), with confirmation to the Hon. Treasurer, D. J. Montier, Eyebrook, Oldfield Road, Bickley, Bromley, Kent BR1 2LF.

CORRESPONDENCE

Correspondence on membership, subscription renewels, changes of address and all related matters should be addressed to the Hon. Secretary, Cdr. M. B. Casement OBE, RN, Dene Cottage, West Harting, Petersfield, Hants GU31 5PA, UK (or Email: mbcasement@aol.com). For details of Club Meetings, see inside front cover.

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Bulletin of the

British Ornithologists' Club

Edited by
Prof CHRIS FEARE

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Volume 119 No. 3 September 1999

MEETINGS are held in the **Sherfield Building of Imperial College,** South Kensington, London, SW7. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from **6.15 pm,** and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about **8.00 pm.**

FORTHCOMING MEETINGS

12 October.—Professor. S. E. Piper will speak on *"Long term studies of birds in southern Africa".* Steven was born and raised in Durban, and trained initially as an engineer, but an interest in birds while at university led him through subsequent degrees in statistics (bird-ringing data analysis) and mathematics (demography of the Cape Griffon). He has been involved in studies of the Cape Griffon *Gyps coprotheres* and Long-tailed Wagtail *Motacilla clara* for over 20 years, and recently turned his hobby into his profession on joining the School of Botany and Zoology at the University of Natal.

*Applications to the Hon. Secretary by **28 September,** please.*

30 November.—Richard ffrench on *"Dickcissels in Trinidad".* Born in 1929, Richard came into ornithology comparatively late, just before he left Oxford for a period of teaching. After a short spell in Barbados, he settled in Trinidad, staying for 27 years, during which he produced the first field guide for a neotropical country to include comprehensive information on life history, as well as idenitification. He studied Dickcissels for about eight years, before they suddenly abandoned their winter visits to Trinidad. Returning to Britain in 1985, Richard has maintained his special interest in birds of Trinidad and Tobago, which he visits regularly with birding tours.

*Applications to the Hon. Secretary by **16 November,** please.*

18 January 2000.—Jon Hornbuckle on *"Birds of Andean Peru".* Jon took early retirement in 1993, after a career in scientific and technical management with the steel industry, to pursue his wildlife interests full-time. He has extensive experience as an ornithological fieldworker and ringer, in many parts of the world, but especially South America where he has led surveys of threatened cloud forests in NW Ecuador and NE Peru. He has lectured extensively on these experiences, and is an author of a considerable number of papers and reports, including one (with R. C. Brace) published in *Bull. B.O.C.* 118: 36–47.

*Applications to the Hon. Secretary by **4 January** please.*

Tel/FAX: 01730 825280 for late bookings and cancellations.

Advance notice of meeting dates for the year 2000. Arrangements have been made for eight meetings on the following Tuesdays: **18 January** (see details above), **29 February**, **4 April**, **2 May** (AGM and social evening—with informal "mini-talks"), **4 July**, **3 October**, **31 October** and **28 November**. Details of speakers will be published, when finalised.

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club on these dates, giving as much advance notice as possible—please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants GU31 5PA, UK (or **Email: mbcasement@aol.com**).

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 119 No. 3 Published 17 September 1999

CLUB NOTES

The eight hundred and eighty third meeting of the Club was held on Tuesday 20 April 1999, at 6.15 p.m. 30 Members and 14 guests attended.

Members present were: The Rev. T. W. GLADWIN (*Chairman*), Miss H. BAKER, Sir David BANNERMAN Bt., Capt. Sir Thomas BARLOW Bt. DSC, RN, P. J. BELMAN, I. R. BISHOP, D. R. CALDER, Cdr M. B. CASEMENT RN, Professor R. J. CHANDLER, S. J. FARNSWORTH, C. B. FRITH, A. GIBBS, D. GRIFFIN, C. A. R. HELM, K. HERON, J. A. JOBLIN, R. H. KETTLE, D. J. MONTIER, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. N. MULLER, Dr R. P. PRŶS-JONES, P. J. OLIVER, N. J. REDMAN, Dr R. SAFFORD (*Speaker*), P. J. SELLAR, Dr D. W. SNOW, F. STEINHEIMER, N. H. F. STONE, and C. W. R. STOREY.

Guests attending were: J. BARREIRO, Ms G. BONHAM, Mrs J. B. CALDER, Mrs C. R. CASEMENT, Dr A. S. CHEKE, Dr D. W. FRITH, C. CARTER, Mrs J. M. GLADWIN, J. P. HUME, Mrs J. A. JONES, Mrs M. MONTIER, P. J. MOORE, Mrs M. OLIVER and B. WARREN.

After dinner, Roger Safford gave an illustrated talk on the "*Birds of Mauritius*", which was enthusiastically received by all present. The following is a brief synopsis:

Mauritius (1600 km^2) is a volcanic island in the Mascarene archipelago, in the tropical southwest Indian Ocean. At the time of first settlement around 1640, the island was completely covered by wet evergreen forest, dry semi-deciduous forest or, in the driest areas, a palm 'savanna'. These habitats supported an extraordinary fauna, with a large component of species so distinctive that their affinities remain unknown; however, the extant fauna shows signs of Asiatic, Malagasy, African and even Australasian affinities. Since human colonisation, around two thirds of the 68 or so native vertebrates have become extinct, leaving 11 landbirds and eight nesting seabirds among the survivors. Three main impacts have caused this: destruction of over 95% of the native vegetation, severe invasion of all native ecosystems by exotic plant species, and introduction of animal species including several predators on birds and their nests. Hunting, organochlorine pesticides and disease have also contributed to declines.

The three larger non-passerines—Mauritius Kestrel *Falco punctatus*, Pink Pigeon *Columba mayeri* and Echo Parakeet *Psittacula echo*—have all been critically endangered but have increased their populations in recent years, thanks to intensive conservation efforts. The Pink Pigeon is distinctive enough to have sometimes been placed in its own genus (*Nesoenas*). The parakeet and the Mascarene Swiftlet *Collacalia francica* are outlying members of typically Asiatic genera; the latter nests in lava tubes where many colonies suffer human persecution. The Mauritius Black Bulbul *Hypsipetes olivaceus*, a wide-ranging omnivore, is a representative of a Malagasy regional radiation of an Asiatic genus, whereas the carnivorous Mauritius Cuckoo-shrike *Coracina typica* shows plumage similarities to Australasian species. Both the kestrel and the Mascarene Paradise Flycatcher *Terpsiphone bourbonnensis* are perhaps of African/Malagasy origin. Unusually, two sympatric *Zosterops* species occur: the nectar-feeding Olive *Z. chloronothus* and the generalist Grey *Z. borbonicus*. The specialisation of the first colonist is believed to have permitted a second colonisation, giving raise to the grey species, which remains abundant while the olive is now rare. Finally, the Mauritius Fody *Foudia rubra* is a representative of a characteristic genus endemic to the Malagasy region. It has suffered very severely from nest predation, and now rarely nests successfully outside exotic trees, which appear to provide a refuge from predators. This is a notable example of non-invasive, exotic (tree) species providing the best conservation solution to a problem caused by other, invasive (mammal) species.

The breeding seabirds of Mauritius are concentrated on Round and Serpent Islands. Neither has ever supported rodents and as a result both have remarkable animal communities, including invertebrate and reptile taxa known nowhere else. Round Island has nesting Red-tailed and White-tailed Tropicbirds *Phaethon lepturus* and *P. rubricauda*, Wedge-tailed Shearwaters *Puffinus pacificus*, and a gadfly petrel usually treated as

Trindade Petrel *Pterodroma arminjoniana*, an identification debated by several recent observers.

The extraordinary, barely accessible ecosystem of Serpent Island practically lacks vegetation; it includes an undescribed tarantula which eats geckoes, vast numbers of Sooty Terns *Sterna fuscata*, Common and Lesser Noddies *Anous stolidus* and *A. tenuirostris*, and about 50 pairs of Masked Boobies *Sula dactylatra*.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held in the Senior Common Room of the Sherfield Building, Imperial College, London SW7 on Tuesday 4 May 1999 at 6 p.m. with The Reverend T. W. Gladwin in the Chair. Apologies had been received from Dr R. P. Prŷs-Jones, N. J. Redman, R. E. Scott, S. J. Farnsworth and D. Rusling. 20 Members were present.

The Minutes of the Annual General Meeting held on 19 May 1998, which had been published (*Bull. Brit. Orn. Cl.* 118: 129–133), were approved and signed by the Chairman.

Chairman's report. The Chairman opened by saying that last year he had broken with recent custom by making a separate report to the Annual General Meeting. He had decided that there are again a number of events, wider issues and matters under consideration, that deserve that the practice be continued.

The recent period has seen the passing of several members who have made significant contributions to ornithology. Two of these past members, John Elgood and Ronald Peal, were also great servants of the Club: John Elgood's obituary appeared in *Ibis* (1999, 141: 523), and an obituary and tribute to Ronald Peal will in due course be published in the *Bulletin*.

The Devon Birdwatching & Preservation Society celebrated its 70th anniversay in 1998 with a service in St. Mary's Church, Dartington, in December. He had been invited to preach, and was pleased to greet and congratulate the society, on behalf of the Club. It was at Dartington that David Lack carried out his studies of the Robin. Thus he had chosen for his address the title of David Lack's book *Enjoying Ornithology*. He had also corresponded with the Cambridge Bird Club, whose 75th anniversary celebrations in 2000 are to include an "omnibus publication", and is attempting to contact as many past members as possible.

As agreed last year, the complete bound set of *Bulletins*, previously passed into the custody of each succeeding Chairman, has been deposited in the Club's archives in the Natural History Museum at Tring. An account of the archive (118: 203, 1998) was published in the *Bulletin* in December. Francis Stone, who retires from the committee this year, has kindly agreed to continue as our appointed Archivist.

The question of the authenticity of the Club's gavel continues to be researched. However, replies from the Chairman's initial enquiries suggest that "it is very unlikely that wood which could be satisfactorily identified as coming from H.M.S. *Beagle* was available when the gavel was apparently produced".

The Club continues to enjoy good financial health. As a charity it has an obligation to use the product of its trust funds, and the cost of forthcoming publications will be appropriately underwritten from these.

Two very important matters currently being reviewed are the production of the *Bulletin*, and the possibility of membership for interested ornithologists who are not members of the British Ornithologists' Union (BOU).

The current page format of the *Bulletin*, its readable style, and the introduction of colour plates are evidently very popular. We do, however, need to review the production of the *Bulletin* in view of changes that have occurred in printing methodology and technology.

Under the current Club Rules, there is only exceptional provision for ornithologists who are not members of the BOU to be admitted to membership of the Club. But there is now a much wider interest in avian systematics and taxonomy, especially in speciation, and there is an opinion that favours a category of Membership for non-BOU members, whilst at the same time materially continuing the historic link for BOU Members. The membership will be invited to express their views in the months ahead, with the intention of bringing any proposals to an Annual General Meeting.

The Club continues to enjoy warm and kind relations with the BOU, with whom it will be jointly publishing *The Bird Atlas of Uganda*. The Club will also be publishing the proceedings of the BOU/BOC/Natural History Museum/BirdLife conference *Why Museums Matter*: *Avian Archives in an Age of Extinction*. It remains his view that those responsible for funding our natural history museums have failed to recognise the scientific and conservation value of historic and time-series biological material. For that and other reasons he believed this forthcoming conference to be particularly important.

Amberley Moore has decided to resign as Vice-Chairman. The Club has already recognised her considerable past contributions. However, he additionally thanked her now for her support and the wise counsel she had given him over the past two years, and wished her continued good health. The Chairman recorded his thanks also to Francis Stone, who retires from the Committee this year, Michael Casement (*Hon. Secretary*), David Montier (*Hon. Treasurer*), all other Members of the Committee, Professor Chris Feare (*Hon. Editor* of the *Bulletin*), Robert Prŷs-Jones and other members of the Publications Sub-Committee, John Farnsworth (*Hon. Publications Officer*), the Trustees of the Herbert Stevens Trust Fund, Imperial College for the provision of parking, meeting facilities and dinners, and to all who have supported the Club in so many ways through the past year.

The Annual Report of the Committee for 1998. The *Hon. Secretary* pointed out that this was now an integral part of the Annual Accounts, copies of which were before all Members present, and would be published in the June issue of the *Bulletin* 119 (2). He drew attention to some of the highlights of this report, and called for any questions. There were none.

The Annual Accounts for 1998. The *Hon. Treasurer* presented the accounts for the year ended 31 December 1998, and drew attention to the salient features. There was a surplus of income over expenditure of £9,659 for the year, £9,069 being attributable to Unrestricted Funds, from which £3,000 was being transferred into an Unrestricted Designated Fund toward a future publication due in 1999.

The market value of investments increased by £13,610, and at 31 December 1998 the net assets of the Club amounted to £281,442.

The Bulletin. Professor Chris Feare (*Hon. Editor*) reported that he had received an encouraging flow of papers for publication, including 13 in the first four months of 1999. The September issue 119 (3) was complete and would be illustrated with one colour and two monochrome plates. Thirty-four papers were currently in the galley proof stage. Out of 60 papers received in 1998, 18 were rejected as outside the BOC's area of interest. His editorial policy was to give priority to new species.

Election of Officers and Committee

The Chairman said that the Committee's proposals had been published in *Bull. B.O.C.* 119 (1): 3. As no other nominations had been received: M. B. Casement was re-elected Hon. Secretary, D. J. Montier was re-elected as Hon. Treasurer, Dr C. F. Mann and Mr J. A. Joblin were elected Members of the Committee, (*vice* Dr R. P. Prŷs-Jones and Mr N. H. F. Stone, who retire by rotation), and Dr R. P. Prŷs-Jones was elected Vice-Chairman, *vice* Mrs A. M. Moore.

No other items for discussion had been notified in accordance with Rule (12), and the meeting closed at 6.33 p.m.

The eight hundred and eighty fourth meeting of the Club was held on Tuesday 4 May 1999, at 6.30 p.m., following the Annual General Meeting. 21 Members and 5 guests attended.

Members present were: The Rev. T. W. GLADWIN (*Chairman*), Miss H. BAKER, I. R. BISHOP, D. R. CALDER, Cdr M. B. CASEMENT RN, Dr M. J. CARSWELL, Professor R. J. CHANDLER, Professor C. J. FEARE, F. M. GAUNTLETT, D. GRIFFIN, C. A. R. HELM, J. A. JOBLIN, Dr C. F. MANN, D. J. MONTIER, Mrs A. M. MOORE, Mrs M. N. MULLER, P. J. SELLAR, F. STEINHEIMER, N. H. F. STONE, M. P. WALTERS, and R. W. WOODS.

Guests attending were: Ms G. BONHAM, Mrs J. M. GLADWIN, Mrs M. MONTIER, P. J. MOORE, and Mrs S. STONE.

After dinner, Members gave a series of short talks on subject of topical interest; the following is a brief synopsis.

"*Occasional Publications* No. 4"—Mrs Amberley Moore announced the publication of the fourth of the Club's Occasional Publications series, *Type Specimens of Bird Skins in the University Museum of Zoology, Cambridge, U.K.*, by C. W. Benson, later this year. Con Benson, 1909–1982, was Editor of the *Bulletin* from 1968–74, and the author of over 300 papers on ornithology, particularly of south central Africa.

After he retired at the end of his career in the overseas civil service, mainly in Malawi and Zambia, Con Benson was invited by Professor Thorpe to arrange and catalogue the bird collections in the University Museum of Zoology at Cambridge. Most of the collections were acquired in the 19th century, and include the Swainson and Strickland collections. Appreciating the historical importance of the collections and the high number (over 600) of types they contain, he compiled a catalogue of the type material, completing it just before his death.

The Introduction gives brief biographies of the authors of the first descriptions and, in the catalogue which follows, each entry is annotated, giving the original name with full references, the modern name following Peters' *Checklist of Birds of the World*, and a careful review of the status of the type, sometimes with references to accounts of type material in other museums. Also listed are taxa for which type status is not claimed but which are nevertheless of particular historical interest. There is also a wealth of detail to be found in the notes. The collections include the only two known skins of the extinct Newton's Parakeet *Psittacula exsul*, and eight *Geospiza* and *Camarhychus* skins collected in the Galapagos, not by Darwin, but by Henry Fuller (a crew member of the *Beagle*), catalogued by Captain Fitzroy. There is also an account of how the museum acquired a syntype of Wallace's Standardwing *Semioptera w. wallacei* and other birds of paradise collected by Alfred Russell Wallace.

The book is presented as a tribute to Con Benson's great contribution to ornithology, and it is largely due to the untiring efforts of the late R. E. F. (Ronald) Peal, that the Club is at last able to publish it.

Amberley Moore announced that a pre-publication order form would be included with *Bull BOC* 119 (3), to be sent to Members in September.

"Rosefinch eggs". Michael Walters, of the Bird Group, Natural History Museum, Tring, showed slides to illustrate the curious fact that the eggs of *Caropdacus nipalensis*, the Dark Rosefinch, are anomalous in colour, being white with bold reddish-brown blotches, in contrast to those of all other known rosefinches which are bright blue with a few small black or brownish-black speckles. The Dark Rosefinch was formerly placed in a duotypic genus *Procarduelis* with Blandford's Rosefinch, *P. rubescens*, and this genus was considered to be closer to *Carduelis*. Blandford's Rosefinch, however, lays typical rosefinch eggs. It is intended to publish more fully on this point in the future.

"The whereabouts of Darwin's bird collections" by Frank D. Steinheimer, also of the Bird Group, Tring. Charles Darwin, as a bird collector, is almost always considered in connection with the famous "Darwin's finches'. However, his entire bird collection in fact consisted of at least three different parts: first, a small collection of Persian birds of unknown origin; second, a collection of domestic pigeons and ducks, which served him in his work on Natural Selection; and last, but not least, his "Voyage of the *Beagle*" Collection, which includes the Darwin's finches, among much other material.

The first two collections are both now at The Natural History Museum in Tring, other than a few pigeons at the Down House Museum. The last part, however, is scattered around numerous different institutions and, perhaps surprisingly, the whereabouts of about one third of the birds involved is uncertain, despite the collection including important type material. Charles Darwin used a system of labelling for his *Beagle* specimens which gave every specimen a tag number only, each of which refers to a notebook entry. Removal and replacement of labels as specimens passed to subsequent owners frequently resulted in loss of information regarding the specimen tag number and, sometimes, even the fact that Darwin was the collector. Only eight original field labels are known to have survived over the years. Darwin brought home to England about 480 bird skins from the *Beagle* voyage, of which he presented at least ten directly to his friend T. C. Eyton, three to Baron Laugier and 21 to the then British Museum.

The remaining bird skins all went to the Museum of the Zoological Society of London, where John Gould described them. After the dispersal of the Society's Museum in 1855, the main part of Darwin's *Beagle* collection of birds was acquired by the British Museum and is now at Tring. But G. R. Gray, then ornithologist at the British Museum, overlooked much important material, so that many specimens from the voyage of H.M.S. *Beagle* went elsewhere, especially to John Gould himself. Gould was not only an excellent ornithologist but also a very good businessman, and he distributed Darwin's bird specimens widely. These skins went through at least 12 different collections and are found today in at least seven institutions. In total, around 200–250 skins of Darwin's *Beagle* collection are at Tring, the remaining 230–280 elsewhere.

Research is continuing into these, in preparation for publication of a complete list of all Darwin's bird specimens.

"Cranes in Japan". Dr Clive Mann said that seven of the world's species of crane are known from Japan, which is a globally important area for three species. Winter feeding with grain is of vital importance. The greatest hazard is created by overhead power lines, much reduced now by placing large balls on the cables, but the potential hazards of epidemics, or accidental poisoning, should not be overlooked.

The second rarest of the world's cranes, the Manchurian Crane *Grus japonicus*, has a resident population of about 600 in Hokkaido, the northern island of Japan; this is about one third of the world population. It is the only breeding crane in the country, and the only non-migratory population of the species.

The White-naped Crane *G. vipio* winters on stubble and paddy fields, in one locality on Kyushu, one of the southern islands, in numbers in excess of 4,000, accompanied by up to 7,500 Hooded Cranes *G. monacha*. These figures represent 80% and 75% of the world populations, respectively.

Small numbers of the Eurasian Crane *G. grus*, with hybrids between this species and *G. monacha*, also the occasional Siberian Crane *G. leucogeranus*, Sandhill Crane *G. canadensis* and Demoiselle Crane *Anthropoides virgo*, are found with them.

(**Note.** These figures are from personal observations, and *Handbook of the Birds of the World*)

"Johnny Rook of the Falkland Islands". Robin Woods gave a brief talk, with slides, of his recent experiences of this fascinating bird. The Striated Caracara *Phalcoboenus australis* has black plumage striated with white on the neck and loud raucous calls. It is known as the Johnny Rook in the Falkland Islands where Charles Darwin in 1833/34 found it 'exceedingly numerous'. He was impressed by the mischievous, inquisitive nature and extraordinary tameness of his handsome bird of prey.

The introduction of sheep farming inevitably brought persecution. An Ordinance for the Destruction of Birds of Prey (1908) provided bounties and, by 1922, the Government Naturalist warned that Johnny Rooks were in danger of extermination. They were removed from the 'pest' list but killing continued and in 1995 the Falkland Islands Government asked Falklands Conservation to survey the breeding population, now restricted to offshore islands.

Robin, with colleagues, visited over 50 islands on the auxiliary ketch *Penelope* in spring 1997 and 1998. Coasts were walked to find territories and nest sites which were recorded with the aid of a Global Positioning System (GPS) instrument, and photographed when possible. A surprising discovery was that trios of adults were found on several islands. Some seemed to be jointly guarding a single nest, all apparently in harmony.

The Falkland Islands breeding population was calculated at *c*. 500 pairs, of which half breed in the Jason Islands group, preying on colonially nesting seabirds. A small number probably still inhabit islands south of Tierra del Fuego.

Juveniles disperse, gathering in large flocks in winter at some settlements. Their tameness, opportunistic scavenging, and attacks on weak or sickly lambs, still cause problems for some farmers, while others value their presence, particularly as a tourist attraction.

"New threats to island birds". Professor Chris Feare showed photographs illustrating the devastating effects of "crazy ants" *Anoplolepis gracilipes* on aspects of the ecology of Bird Island, Seychelles. The ant was accidentally introduced to the island, probably in the early 1990s. It remained localised near the food store and in very small numbers until Black Rats *Rattus rattus* were eradicated from the island in 1995. The ant population then increased dramatically, and by 1997 they infested over half of the 80 ha island. The ants had killed land crabs and large numbers of insects, the ecology of which on Bird Island was poorly known. In some places, large trees had been killed when ants undermined the roots. The most dramatic effect on birds resulted from the failure of Sooty Terns *Sterna fuscata* to nest in infested areas; as a result, in 1997 these terns were deprived of *c*. 1.5 ha of their nesting area, representing space for *c*. 60,000 pairs. Early attempts at control of the ants have met with little success. The same species of ant has recently been reported from Christmas Island, in the eastern Indian Ocean, where it is causing similar problems to vegetation and to terrestrial invertebrates, and where there are concerns over possible effects on the endemic frigatebird *Fregata andrewsi* and Abbott's Booby *Sula abbotti*.

"The English names of British birds". The Chairman, the Rev. Tom Gladwin, concluded proceedings with a light-hearted talk on this provocative topic. He queried the need, when scientific names have long proved widely accepted for scientific papers and at public enquiries etc., for unnecessary changes to be imposed on reluctant ornithologists. In particular, such standardisation ignores and rejects much of our cultural heritage.

How many announced their hearing of the first Common Cuckoo this spring, rather than simply referring to it as the Cuckoo? The Dunnocks nesting in his garden have yet to be identified as Hedge Accentors.

There appeared to be no logic to some of the proposed changes. Why the Greater Cormorant when there isn't a Small Cormorant? There are Greater and Lesser Flamingoes, Greater and Lesser Yellowlegs, and Greater and Lesser Short-toed Larks. Why, therefore, doesn't the Lesser Black-backed Gull have a relative to be known as the Greater Black-backed Gull? Why did our two species of White-fronted Geese deserve Greater and Lesser designations but not our black-backed gulls and spotted woodpeckers? When indeed does Great become Greater?

Then follows the problem illustrated by the Lesser and Common Whitethroats. The Lesser Whitethroat, as might have been expected, has no Great or Greater cousin. It does, however, have a relative designated as Common. Have we forgotten the Whitethroat crash in 1968, following which the Lesser Whitethroat became more numerous in some areas than its Common relative? Have changes in populations and relative abundance ceased?

There are also problems with geographic designations. Has global warming brought an end to changes in distribution? Are, for example, the European Serin, European Greenfinch, European Goldfinch and European Siskin now confined eternally to a single continent? How far west did the Collared Dove have to expand its range before being granted the title Eurasian, and what will it be known as, if and when, and by whatever means, it appears in North America?

He finished with a quotation from Lewis Carolls's *Alice Through the Looking Glass*:

"What's the use of having names" the Gnat said "if they won't answer to them?"
"No use to them" said Alice, "but it's useful to the people that name them I suppose".

Club Visit to Down House. The eight hundred and eighty fifth meeting of the Club was celebrated with a visit to The Down House Museum, Near Ashford, Kent, on Thursday 24th June 1999. Sadly, due to illness, Rev. T. W. Gladwin (*Chairman*), was unable to attend this highly successful and interesting gathering. The meeting started at 10.30 a.m. 23 Members and 15 guests attended.

Members attending were: M. Adcock, W. N. Anderton, Miss H. Baker, P. J. Belman, Captain Sir Thomas Barlow DSC Bt. rn, D. R. Calder, Dr M. J. Carswell, Cdr. M. B. Casement rn (*Hon. Secretary*), Professor R. A. Cheke, S. J. Farnsworth, A. Gibbs, D. Griffin, C. A. R. Helm, J. A. Jobling, R. H. Kettle, M. R. Lawn, B. J. Meadows, D. J. Montier (*Hon. Treasurer*), Mrs. A. M. Moore, R. G. Morgan, P. J. Oliver, T. Poyser and N. J. Redman.

Guests attending were: Mrs C. R. Casement, Mrs J. B. Calder, Mrs F. Farnsworth, Mrs B. Gibbs, Mrs S. Griffin, R. Irwin, Mrs P Jobling, Mrs I. Kettle, Mrs B. J. Meadows, Mrs. M. Montier, Mrs E. Morgan, P. J. Moore, Mrs M. Oliver, Mrs A. Poyser and Ms C. Sifontes.

Down House was the home of Charles Darwin and his family from 1842 for over 40 years, and was the place of which Darwin wrote: "My life goes on like clockwork and I am fixed on the spot where I shall end it".

Although only 16 miles from London, even today there is an atmosphere of calm and peace in the house and garden. The house has recently reopened after major repairs and restoration, under the management of English Heritage. The ground floor, around which visitors are guided by audiotour, are set out as they were when the Darwins were at home, with all the domestic detail.

But for Club Members, of greatest interest, perhaps, was the opportunity to see Darwin's study, furnished with its original furniture, with books from his library and the clutter of specimens, instruments and notebooks from his lifelong "passion for collecting".

The first floor has been opened for the first time, where new exhibitions have been set up, devoted to Darwin's background and childhood, to his voyage in the *Beagle* (which includes skins of Galapagos finches), to his collections, to his life and work at Down House and the controversy which followed the publication of *On the Origin of Species*. Members and guests were able to enjoy the gardens which are being carefully restored, and pace Darwin's Sandwalk on a warm June day.

After the visit Members met at the Blacksmith's Arms at Cudham for lunch, and later at Bickley where the Hon. Treasurer and Mrs Montier entertained the meeting for tea.

Comments on the sternal morphology of Australasian pigeons

by Walter E. Boles

Received 22 January 1998

In most avian families, the morphology of the sternum is markedly uniform. A striking exception is the range of conditions exhibited among the pigeons (Columbidae), particularly in the shape and size of the incisurae, trabeculae and corpus sterni. Because these various structural states show a strong correspondence with certain postulated subgroups in the pigeons, their distribution can be a useful systematic tool. The greatest range of sternal morphology occurs among the species of Australasia (Australia, New Guinea, New Zealand and New Caledonia). The relationships of some of the lesser known forms and the generic limits in some of the Australian species have been unresolved. Most of these have one of the distinctive sternal morphologies characterizing the various subgroups.

As part of their description of the Rodriguez Solitaire *Pezophaps solitaria,* Newton & Newton (1869) briefly discussed the variation in sternal morphology in the Columbidae and illustrated several of the states found in Australasian genera. Shufeldt (1901) made passing reference to the variation found by Newton & Newton (1869), but largely restricted his description of the pigeon sternum to the states exhibited by North American taxa. In his examination of the osteology of the Columbiformes, Martin (1904) discussed a number of characters of the sternum, but devoted few comments to the variation and distribution of the incisurae and trabeculae within the order, and in his proposed systematic arrangement of the pigeons afforded little weight to the configuration of these features. Verheyen (1957) noted the variation in this family, recognizing six main types, which he incorporated into his revision of the pigeons; however, the taxa he sampled omitted a number of important Australasian forms. The condition of the sternum is reported on here for all Australasian genera of pigeons, represented by at least one species each, which are given in Appendix 1. Osteological terminology follows Baumel & Witmer (1993), except that as terms of position and direction anterior is used rather than rostral and posterior rather than caudal.

The variation in morphology of concern here is in the position, size and extent of the incisurae and trabeculae of the margo costalis and caudalis. The incisura medialis may be notched (open posteriorly) or perforated (enclosed posteriorly by a bony border=fenestra medialis). Within some taxa, the incisura medialis is subject to intraspecific variation, and occasionally both conditions may occur in the same individual. In other genera, only one state is evident.

The sternal morphology that characterizes the 'typical', unspecialized forms, such as *Columba, Zenaida* and *Streptopelia,* is found uniformly in North American (Shufeldt 1891) and European genera.

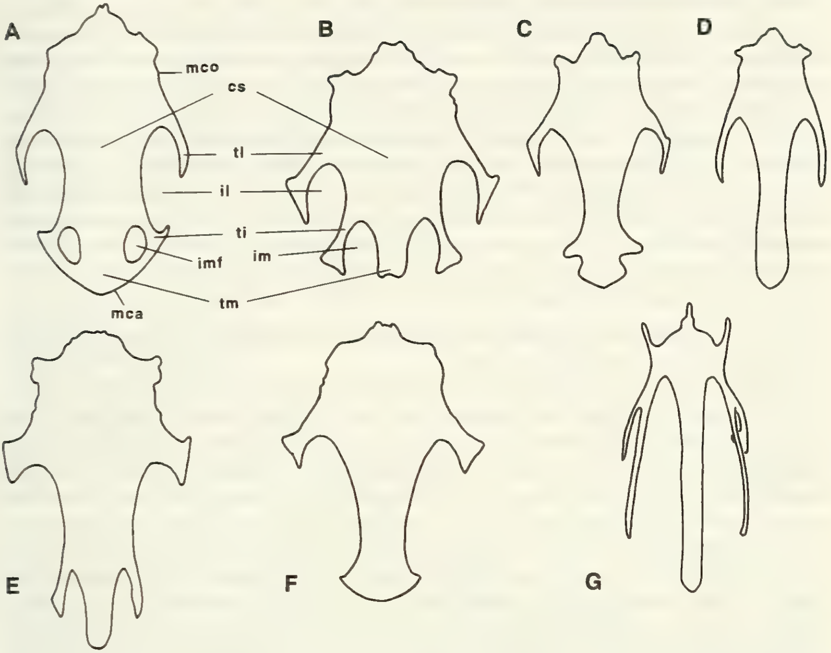

Figure 1. Outlines of the sterna of selected Australasian pigeons, showing the range of morphological variation in the incisurae, trabeculae and corpus sterni, with the sternum of a partridge for comparison: (a) *Columba livia;* (b) *Ptilinopus magnificus;* (c) *Ocyphaps lophotes;* (d) *Petrophassa smithii;* (e) *Goura cristata;* (f) *Didunculus strigirostris;* (g) *Perdix perdix*. Sterna (a–d) and (f) shown to the same scale, (e) reduced by about half relative to these, and (g) reduced to approximate (d) in size. Abbreviations: **cs,** corpus sterni, **il,** incisura lateralis, **im,** incisura medialis, **ifm,** incisura (fenestra) medialis, **mca,** margo caudalis, **mco,** margo costalis, **ti,** trabecula intermedia, **tl,** trabecula lateralis, **tm,** trabecula mediana.

Differences between this and other sternal morphologies represent either reduction in size or hypertrophy of these features, or by a shift in their positions.

Group 1: Columba, Streptopelia, Macropygia, Reinwardtoena, Phaps

In the typical columbid sternum (Fig. 1a; also see Newton & Newton 1869, Plate XXXIII, Fig. 169; Martin 1904, Fig. O^3a), the trabecula lateralis joins the margo costalis about a third of the way from the anterior end. The trabecula lateralis is usually broad and straight for most of its length, although the posterior margin is concave. The lateral end curves posteriorly into a distinct point to about the sternal midpoint. The trabecula intermedia is broad, but shorter than the trabecula lateralis. The end is expanded both anteriorly and posteriorly, a condition termed herein as "booted". This boot is pointed anteriorly, while its posterior portion usually connects with the trabecula mediana, closing off the incisura medialis into a fenestra. The incisura lateralis is long (about a third of the length of the sternum); its width is about a third to a half of its length. Its medial margin is concave, which in some specimens makes the corpus sterni relatively thinner, producing a waisted appearance. The fenestra (incisura) medialis is about a third or less the size of the incisura lateralis, and almost always enclosed posteriorly. The trabecula mediana is broad, and the margo caudalis is rounded or has a posteriorly-directed rounded point. *Phaps* differs by having the posterior end somewhat narrower in *P. chalcoptera* and, most noticeably, *P. elegans*; in *P. histrionica,* however, it is not markedly different from that of the other genera. The sternum of *Phaps chalcoptera* was illustrated by Martin (1904, Fig. P^3a).

Group 2: Ptilinopus, Ducula, Lopholaimus, Gymnophaps, Drepanoptila, Hemiphaga, Treron, Alectroenas

Another condition (Fig. 1b; also see Martin 1904, Figs. S^3a, T^3a, U^3a) differs from that in *Columba* by having the lateral margin of the trabecula lateralis booted, extending into both anteriorly- and posteriorly-directed points. The posterior point often extends posteriorly beyond the sternal midpoint. The trabecula intermedia is proportionally longer than in the typical condition. The end is booted, but the posterior margin joins the trabecula mediana less often. The margin of the incisura lateralis between the bases of the trabeculae lateralis and intermedia is straight or only slightly waisted, and corpus sterni is proportionally wider. The incisura medialis is larger relative to the incisura lateralis, in part because of the greater length of the trabecula intermedia. In most specimens, the incisura medialis is not enclosed posteriorly, although in individuals one or both may be fenestra. The margo caudalis is straight or slightly indented at its midpoint.

Other conditions of the sternum

Different changes are exhibited by the other Australasian genera. There is a progressive narrowing of the corpus sterni posterior to the trabecula lateralis and a reduction in the trabecula intermedia and the incisura medialis. Among these genera, the trabecula lateralis exhibits opposite trends, in most taxa becoming increasingly gracile, but in two becoming more robust.

Group 3: Ocyphaps

Ocyphaps (Fig. 1c) resembles *Phaps* in the anterior portion of the sternum except that the trabecula lateralis originates more anteriorly and by being narrower throughout, without the degree of anterior divergence of the lateral borders. Differences that are more substantial occur in the posterior end. The trabeculae intermedia and mediana are short (15% of length), the former having little terminal lateromedial expansion, the incisura medialis is short and more circular, and the margo caudalis is straighter.

Other pigeon genera

Chalcophaps, Henicophaps, Gallicolumba, Geopelia, Leucosarcia, Trugon, Geophaps and *Petrophassa* have the trabecula lateralis much thinner and curved over its entire length. The lateral end curves posteriorly to about the sternal midpoint, terminating in a distinct point, short posterior projection or very small boot (expanded anteriorly and posteriorly). Most of these genera resemble *Ocyphaps* in the tendency towards substantial narrowing and reduction of the features of the posterior end, although the extent of reduction varies. There are also differences in the degree of lateral divergence of the anterior end. A consequence of the respective anterior and posterior repositioning of the trabeculae lateralis intermedia is that the incisura lateralis is much longer (up to 50% of sternal length) and the incisura medialis shorter.

Group 4: Leucosarcia, Chalcophaps, Henicophaps, Geopelia, Gallicolumba, Trugon

Leucosarcia shows only minor reduction, limited mainly to an overall narrowing of the posterior end. The trabeculae and incisura are moderately long and the margo caudalis somewhat pointed. The anterior end is moderately narrow, and the trabecula lateralis extends posteriorly past the midpoint of the sternum (see Newton & Newton 1869, Plate XXXIII, Fig. 171). Limited reduction is also evident in *Chalcophaps, Henicophaps* and *Geopelia* (for *Geopelia,* see Newton & Newton 1869, Plate XXXIII, Fig. 175). These are similar to *Leucosarcia,* with some intrageneric variation in the relative lengths of the posterior features and roundedness of the margo caudalis. *Chalcophaps* is proportionally broader at the anterior end. The trend in reduction is continued in *Gallicolumba* and *Trugon*. A specimen of *G. luzonica* is noticeably narrower than one of *G. jobiensis*. As in *Trugon,* the sternum in this species is narrower over the entire length.

Group 5: Geophaps, Petrophassa

The greatest expression of reduction of the sternum occurs in *Geophaps* and *Petrophassa* (Fig. 1d), in which the trabecula intermedia is absent. Because of this, the incisura lateralis is unbounded distally; its width is greater than the corpus sterni and about two-thirds its length. Likewise, there is no distinct incisura medialis. The lateral margins of the corpus sterni are concave, which is thus slightly waisted in the middle before curving laterally into the trabecula mediana. The corpus sterni is narrow over its entire length, particularly distal to the junction with the trabecula lateralis. The trabecula mediana is narrow, and the margo caudalis is rounded.

Group 6: Goura, Caloenas

An opposite trend in the development of the trabecula lateralis occurs in *Goura* and *Caloenas* (Fig. 1e; also see Newton & Newton 1869, Plate XXXIII, Fig. 176, and Martin 1904, Fig. R^3 for *Goura*). In these genera, the trabecula lateralis is broad (markedly so in *Goura*), which is a result of both anterior and posterior expansion. The trabecula is directed more laterally, and the end extends posteriorly in a large triangular projection (to or beyond anteroposterior midpoint of the sternum). These taxa differ in the configuration of the posterior section. In *Goura* the incisura medialis are relatively long and elliptical, and the trabecula intermedia slender and moderately long (originating about 20% of the way from the posterior end), whereas in *Caloenas* all are shorter (the trabecula intermedia originates nearer the posterior end and is about 15% of sternal length) and the trabeculae intermedia are proportionally broad with slight terminal boots.

Group 7: Didunculus

Didunculus (Fig. 1f; Newton & Newton 1869, Plate XXXIII, Fig. 170; Martin 1904, Fig. V^3a) shows an unusual combination of features. The trabecula lateralis originates about a quarter of the way from the anterior end, and is short, broad throughout its length and somewhat concave on the posterior margin; it terminates in a short posterior projection, and resembles *Caloenas* in being directed more laterally than in most genera. The trabecula intermedia and the incisura medialis are absent. The posterior half of the corpus sterni is narrow and waisted, before flaring laterally on the trabecula mediana. The margo caudalis is straight.

Systematic aspects

Verheyen (1957) divided the morphological states of the pigeon sternum into six major types. The first was that characteristic of *Columba,* variations of which occurred in *Streptopelia* and *Macropygia*. The second was characterized as the *Oena*-type, which was also found in *Phaps*. There were several variations of this state, including one seen in *Goura,* another in *Didunculus* and a third in *Ducula, Ptilinopus* and *Treron*. The *Geopelia*-type also included *Leucosarcia* and *Ocyphaps,* with different variations exhibited by *Chalcophaps* and *Otidiphaps*. The fourth type was restricted to *Gallicolumba,* the fifth included *Geophaps* and *Megaloprepia* (=*Ptilinopus magnificus*), and the last only *Starnoenas,* a New World genus.

Some of these groupings are similar to those described in this paper, but others are quite divergent. The most striking anomaly is the association of *Geophaps* with *Ptilinopus magnificus*. The inclusion of the other fruit pigeons with *Goura* and *Didunculus* is also at considerable variance with the results of this work. Verheyen (1957) used taxa from a much wider geographic area (i.e. the world) than just Australasia, but this should not have affected the conclusions in this manner.

The morphology of the sternum is not sufficient in itself to be the sole criterion on which to base taxonomic decisions. Nonetheless, it is a useful adjunct to other characters in establishing relationships in the Columbiformes. In some instances, where there is a dichotomy of opinion, this character can provide strong support for one proposal.

The fruit pigeons (Treroninae) have their centre of diversity in Australo-Papua, where *Ptilinopus* and *Ducula* dominate, extending east to islands of the Pacific Ocean, west into Indonesia and north to the Philippine Islands, with outliers in Africa and Southeast Asia (*Treron, Alectroenas*). There are several monotypic genera in Australasia. The sternal morphology is uniform among the genera. The placement of most of the genera has been relatively consistent among authors, although two genera have been placed elsewhere in the family by some authors. *Gymnophaps* of New Guinea and the Solomon Islands was placed in *Columba* by Salvadori (1893), and kept separate but adjacent to *Columba* in the subfamily Columbinae by Peters (1937); Goodwin (1970) believed its affinities were with the fruit pigeons. The morphology of the sternum is that of a fruit pigeon, and supports Goodwin's action.

The phabine pigeons of Australo-Papua are of special interest. There has been considerable disagreement about the limits of the nominal genera *Phaps, Ocyphaps, Henicophaps, Geophaps, Petrophassa, Histriophaps* and *Lophophaps*. Goodwin (1970), followed by Condon (1975), merged *Histriophaps* with *Phaps,* an action now accepted by most authors, and *Lophophaps* and *Geophaps* with *Petrophassa*. Frith (1982) and Christidis & Boles (1994) maintained *Geophaps,* including *Lophophaps,* distinct from *Petrophassa*. Schodde (1982) synonymized *Ocyphaps* with *Petrophassa*. The placement of *Histriophaps* with *Phaps* is supported by sternal morphology. The unusual and highly derived morphology found in *Petrophassa* and *Geophaps* argues that they are certainly sister-taxa, and the decision to consider them congeneric may be justified. Conversely, the merger of *Ocyphaps* with *Petrophassa-Geophaps* is not supported by sternal morphology. This former genus is somewhat intermediate between these genera and *Phaps* in its degree of reduction of the trabecula mediana and the incisura medialis, but overall shows a greater resemblance to the latter. The intermediate morphology is not surprising given the current recognition of *Ocyphaps* as a monotypic genus, placed between these groups in a linear sequence (e.g. Christidis & Boles 1994). Further evidence is required before the closest relatives of *Ocyphaps* in the phabine assemblage can be decided.

Frith (1982) was among the authors that have remarked on the structural and behavioural convergence by species of *Petrophassa-Geophaps* on partridges and similar-sized gallinaceous birds, which are absent in Australia. The similarities extend to the sternal morphology. Partridges, like *Petrophassa-Geophaps,* have a very long slender trabecula lateralis, which is situated far anteriorly, and a narrow corpus sterni and trabecula mediana, bordered by a very long incisura (Fig. 1g). Whether this convergence in morphology of the sternum reflects mechanical convergence between these taxa in the action of the pectoral and supracoracoideus muscles invites investigation. These pigeons, like similarly sized partridges, have a markedly rapid take off.

Leucosarcia, Chalcophaps, Henicophaps, Trugon and *Geopelia* share roughly similar sternal morphologies characterized by varying degrees of reduction. These resemblances may not be due to close relationships among these genera, and the diversity of body form and behaviour argues against these forming a monophyletic assemblage. The sterna may only demonstrate a superficially similar stage of initial divergence from the typical columbid morphology.

Goura and *Caloenas* have been grouped either implicitly in a linear sequence, usually near the start, or explicitly in their own subgroup within the family. The sternal morphologies of these taxa differ from the typical condition in the same manner. The trends in their variation are unlike those observed in other divergent groups of Australo-Papuan pigeons, and suggest that these features are valid indicators of relationship.

The monotypic *Didunculus* of Samoa exhibits a unique suite of sternal characters. This taxon has uncertain affinities, and the unusual sternal morphology reflects this. It has been suggested that *Didunculus* represents a somewhat transitional form between pigeons and parrots. The psittaciform sternum is similar in some respects to the morphology of *Columba* in the shape of the corpus sterni and position of the incisura medialis. The sternum of *Didunculus* shows little resemblance to that of either parrots or typical pigeons, and thus seems unlikely to represent the morphology expected in a mutual ancestor of these orders.

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Appendix

Species of pigeons for which the sternum was examined. *Caloenas nicobarica; Chalcophaps indica; Columba: leucomela, livia, vitiensis; Didunculus strigirostris; Drepanoptila holosericea; Ducula: bicolor, concinna, mullerii, whartoni; Gallicolumba: jobiensis, luzonica; Geopelia: cuneata, humeralis, striata; Geophaps: plumifera, scripta, smithii; Goura cristata; Gymnophaps albertisii; Hemiphaga novaeseelandiae; Henicophaps albifrons; Leucosarcia melanoleuca; Lopholaimus antarcticus; Macropygia amboinensis; Ocyphaps lophotes; Otidiphaps nobilis; Petrophassa: albipennis, rufipennis; Phaps: chalcoptera, elegans, histrionica; Ptilinopus: magnificus, regina, rivoli, superbus; Reinwardtoena reinwardtsi; Streptopelia: chinenis, risoria; Treron psittacea; Trugon terrestris; Zenaida auriculata.*

A reassessment of the subspecies in the owl *Glaucidium tephronotum*, with notes on its biology

by Paul Herroelen, Michel Louette & Mark Adams

Received 27 March 1998

The Red-chested Owlet *Glaucidium tephronotum* is a relatively little-known Afrotropical forest resident. Six subspecies, *tephronotum*, *pycrafti*, *medje*, *elgonense*, *lukolelae* and *kivuense*, have been described, of which only the first four have been retained by *The Birds of Africa* (Fry *et al.* 1988; hereafter referred to as *BoA*). After careful examination of 46 specimens, representing all known taxa (see Table 1), we have come to the conclusion that only the first three subspecies should be recognised.

This study became necessary because PH was confronted with the substantial differences in measurements and weights that exist between birds of West Africa and those of the Democratic Republic of Congo (Central Africa) and eastern Africa as published by several authors, here grouped in Table 2. Chapin (1932), Bannerman (1933, 1951) and Prigogine (1971) previously pointed out these differences. However, the treatment in *BoA* and the measurements given appear to be incomplete and partly inaccurate. One may further wonder why in this reference work the juvenile and immature remain undescribed, notwithstanding the presence of a young bird in the collections of the Koninklijk Museum voor Midden-Afrika, Tervuren (KMMA), which was indicated previously by Chapin (1939).

Material and methods

A total of 46 specimens from seven collections were examined, including the six type specimens (Table 1). The material from KMMA includes four birds collected by PH and the type of *elgonense* (Granvik 1934). The material from KBIN includes the type of *kivuense* (Verheyen 1946), and the specimens from AMNH include the types of *medje* and *lukolelae* (Chapin 1932); this material and that from NMK, LACM and ZFMK was examined by PH and ML. BMNH specimens, including the types of *tephronotum* (Sharpe 1875) and *pycrafti* (Bates 1911a), were all examined by MA. All authors studied the four *tephronotum* skins from Liberia.

Our measurements (PH and MA) are shown in Table 3. The flattened left wing was measured with a ruler with a stop at zero. The tail and the graduation of the tail were measured with a thin ruler with the scale starting from the outer edge of one end, pushed against the root of the central tail feathers, as described by Svensson (1992). Wing and tail feathers were checked for wear and active moult, which was scored from 0 (old feather) to 5 (full grown new feather), as shown by Ginn & Melville (1983).

Type locality of the species

Sharpe (1875) described *Glaucidium tephronotum* with alleged type locality "South America". In 1911 Bates described the taxon *Glaucidium pycrafti* from Bitye, Cameroon. Chapin (1921), realising that *tephronotum* was an African bird, *de facto* synonymized both names, because he corrected the type locality for *tephronotum* to "Bitye". Later, a specimen became known from Mampong, Ashanti, Gold Coast (now Ghana) (Bannerman 1934) and this locality was given

TABLE 1
Specimens examined for this study

Nominal subspecies	Total	Ad. male	Ad. female	Imm. male	Imm. female	Juv.	Unsexed adults
tephronotum	6	3	2	—	—	—	1
pycrafti	4	3	—	—	—	1	—
medje	33	15	5	3	6	2	2
elgonense	1	—	1	—	—	—	—
lukolelae	1	—	1	—	—	—	—
kivuense	1	1	—	—	—	—	—
Totals	46	22	9	3	6	3	3

The specimens were examined in the following museums: Koninklijk Museum voor Midden-Afrika (KMMA), Tervuren (21); Koninklijk Belgisch Instituut voor Natuurwetenschappen (KBIN), Brussels (4); American Museum of Natural History (AMNH), New York (6); National Museums of Kenya (NMK), Nairobi (2); the Natural History Museum (BMNH), Tring (10); Los Angeles County Museum of Natural History (LACM), Los Angeles (2); Zoologisches Forschungsinstitut und Museum Alexander Koenig (ZFMK), Bonn (1).

TABLE 2
Published measurements (in mm) and mass (in grams) of *Glaucidium tephronotum*

Nominal subspecies	sex	wing	tail	mass	source
tephronotum	M (3)	102, 103, 105	61, 62, 70	—, 79.6, 85.3	Colston & Curry-Lindahl 1986
	F (1)	105	60	75.3	Colston & Curry-Lindahl 1986
pycrafti	M (3)	102–109	64–72	—	Bates 1930
	M (2)	103, 109	67, 68	—	Chapin 1932
	M (1)	103	66	71	Eisentraut 1963
	F (1)	106	—	73	Eisentraut 1963
medje	M (1)	116	83	—	Chapin 1932
Dem. Rep. Congo	F (2)	116, 121	82, 87	—	Chapin 1932
	M (5)	116–121	82–87	—	Chapin 1939
Uganda	M (3)	—	—	80, 87, 93	Friedmann & Williams 1968
	M (2)	—	—	83.5, 94	Friedmann & Williams 1970
	F (1)	115	85	103	Friedmann & Williams 1970
	M (8)	112–119	80–88	—	Friedmann & Williams 1970
	M (1)	—	—	95	Friedmann & Williams 1971
	F (1)	118	86.5	100	Zimmerman 1972
	M? (1)	116	—	88	Britton in Zimmerman 1972
Kenya	F (1)	121	85 (worn)	—	Ripley & Bond 1971
lukolelae	F (1)	127	95	—	Chapin 1932
kivuense	M (1)	113	81	—	Verheyen 1946
elgonense	F (1)	124	104	—	Granvik 1934
	same	127	92	—	Chapin 1939

as the type locality for the nominate form in *BoA*. However, because it is best to separate *tephronotum* and *pycrafti* subspecifically, this action can be accepted as the designation of a newly chosen type locality for *tephronotum*. The type locality "West Africa" as used by several authors (following Peters 1940) is too vague in any case.

Status and distribution

The status of the Red-chested Owlet has been described as uncommon to rare. Since the publication of *BoA*, the species has been recorded in several new localities, extending its formerly known range. It was found in Gola Forest, Sierra Leone, where it occurred in primary forest and was described as rare; this constitutes the most westerly record of the species (Allport *et al.* 1989). In Ivory Coast, where the species was formerly only known from Tai, it was also found in the managed forest of Mopri, in the centre of the country, and in Yapo Forest in the east

TABLE 3
Authors' measurements (in mm) and mass (in grams) of *Glaucidium tephronotum*

Nominal subspecies	sex	wing	tail	mass	
tephronotum	M (3)	102–105	64–68 (2)	79.6, 85.3	BMNH
	F (2)	104, 104	64, 64 (1)	75.3	BMNH
	—(1)	105	68		BMNH
pycrafti	M (3)	100, 104, 109	63, 66, 66		BMNH
medje	M (12)	113–120	80–89 (3)	102, 111*, 115*	KMMA
Dem. Rep. Congo	mean	116.8	83.9		
	M (2) imm	114, 117	83, 86 (1)	85	
	F (2)	124, 126	92, 82		
	F (4)	112, 116, 117, 127	81, 85, 86, 99		
Kenya	—(1)	120	89	84	NMK
	—(1)	112 (right wing)	78		NMK
elgonense	F (1)	124	93 (from beneath) 104 (from above)		

*stomach contents of 40 g in both birds.

(Gartshore *et al.* 1995, Demey & Fishpool 1994). These records, together with those from Liberia and Ghana (Gatter 1988, Grimes 1987), suggest that the species occurs throughout the Upper Guinea forest block. They indicate, moreover, that the species is not restricted to primary forest but can survive in secondary forest. In the Lower Guinea forest block, it was known to occur in southern Cameroon, Democratic Republic of Congo and Western Uganda (see above); it has recently been found in the Mayombe, Congo-Brazzaville (Dowsett-Lemaire & Dowsett 1989). A third population occurs from extreme eastern Uganda to western Kenya (Mount Elgon and Kakamega—Lewis & Pomeroy 1989).

Description of nominal subspecies

From relevant literature and our own examination, we describe here the nominal subspecies:

tephronotum: breast white with large dark brown spots to feather tips (*BoA*), spots of underparts rufous shaded with dusky (Chapin 1932, 1939). In the 4 birds from Mount Nimba, the spots on the underparts are ovate (length 5–10 mm) and light rufous grey in the hand, but do look darker from a distance. In dorsal view the nominate specimens (including the type) have greyer heads and also (though not as clearly), a less rufous back than on the 3 *pycrafti* specimens. The slate-grey upperparts of the 4 birds from Liberia match the colour of the upperside of 8 Congolese birds (from Equateur, Ubangi, Uele and Kasai), but in 6 other Congolese birds (all from Kivu) and 1 from Rwanda the dorsal side looks a little darker.

pycrafti: underparts (centre of chest, breast and belly) whitish-buff, each feather with a large, terminal, round or oval spot of dark brown (Bates 1911a,b), sepia (Bannerman 1933), blackish (Chapin 1939), black (*BoA*), and large oval black spots, measuring 5 × 7 mm on the flanks (Chapin 1932: 5).

Less rufous than the nominate race, especially down the flanks, the spots are also darker, having a more spherical, rather than tear-drop shape, giving a much bolder appearance; upperparts: dark umber-brown (Bates 1911a,b, 1930), dark chocolate brown (Bannerman 1933, *BoA*).

medje: underparts with black spots narrower and longer 2.6 × 8 mm (3 × 8 mm in *lukolelae* Chapin 1932: 3–4), more heavily spotted with black (*BoA*); upperparts less brownish on crown and back (Chapin 1932). It is larger than *pycrafti*.

lukolelae: crown and back greyer than in *medje* or *pycrafti* (Chapin 1932); *lukolelae* is probably not separable from *medje* (White 1965).

kivuense: blackish spots larger and darker than in *medje* (Verheyen 1946); *kivuense* is probably not separable from *medje* (De Roo *in* Keith & Twomey 1968).

We consider the two forms above as individual variations within *medje*.

elgonense: underside pure clear white with large drop-shaped spots (colour of the spots not described by Granvik 1934); these spots are dark grey (blackish) and measure 13 × 5 mm; head, back and upper surface of wings dark umber-brown as in *pycrafti* (Granvik 1934) (like *pycrafti* but darker brown above: Chapin 1939, *BoA*); female much larger than *pycrafti*.

In the literature, the plumage of the various populations of this owlet is described as follows:

Wing:

pycrafti: remiges blackish dark brown with umber-brown bars extending across both webs and becoming whitish-buff towards the margins of the inner webs (Bates 1991b).

tephronotum: remiges dusky brown (grey brown) with faint paler bars (also becoming whitish buff towards the margins of the inner webs (*BoA*).

medje (type): remiges blackish brown, with whitish areas invading the inner webs, and, between these, obscure dusky bars (Chapin 1932).

lukolelae (type): remiges brownish black, their inner borders creamy white except near tips, and this whitish colour extending inward on the inner webs to form imperfect bars (Chapin 1932).

all primaries and secondaries obviously barred rufous (Zimmerman 1972).

We find the colour of the bars on the inner webs of the remiges varies from rufous (11 birds) fading to pale brown (11 birds), and being hardly visible in a further 6 birds.

According to *BoA*, upperwing coverts are dusky brown with a rufous wash in adult male *tephronotum*. In general the amount of these different tones of rufous in the wing feathers and on their coverts is very variable; it may be lacking, poorly visible or very conspicuous. The two nearly complete rufous birds (two females) fit into this overall picture: the first was collected on 17 July 1939 at Boende, Democratic Republic of Congo (0°14′S, 20°50′E), (KMMA 36.285); the second was obtained on 1 June or July 1926 at Mount Elgon, Kenya (1°06′N, 34°34′E), the type locality of *elgonense* (KMMA 115.895), to some 1,600 km from Boende to the ENE.

The alula and upperwing coverts have deep rufous margins of variable width and are indeed lacking in two birds (KMMA 114.818, male, 7 August 1954 Lusambo, Kasai and KMMA 74-44-A 460, female, 26 December 1953 Hembe, Kivu). The rufous margins may be restricted to one, two or six coverts (KMMA 59.288, male, 17 September 1951 Yokolo, Tshuapa; NMK 6406, undated Kakamega, Kenya; KMMA 91111, juvenile male 5 April 1956 Bolombo, Tshuapa).

Tail:

Dusky brown with 5 spots on the inner web of the three outer pairs (Bates 1911b), 6 spots in the type of *medje*, 4 spots in the type of *lukolelae* (Chapin 1932), and 4 spots on the three inner rectrices of which only 3 large spots (Bates 1911b) are conspicuous from above (*BoA*), the 4th at the base of the tail concealed under the upper tail coverts. Tail edged with very small whitish or light rufous spots or fringes on the inner web, which gradually wear off.

Other parts:

During a partial moult the sparsely streaked underside is replaced by a pattern of blackish drop-shaped (ovate, oval, teardrop-like) spots (2 × 5–10 mm) of variable size (about 2.6 × 8 mm at their largest in the type of *medje* and about 3 × 8 mm in the type of *lukolelae*: Chapin 1932), the flanks and sides of the belly becoming gradually deep rufous. Also the shape of the spots is variable, in four birds (all KMMA 94.492 Boyagati, 93.007 Ibembo, 36285 Boende, 114.818 Lusambo) they are rather oval (8–10 × 4 mm).

In some birds there is a marked colour difference between the dark grey head and the dusky brown mantle, back and rump but in full adult birds the upperparts are uniform deep dark grey. The dusky brown colour is probably caused by variable amount of rufous, wear or fading. In one male (not preserved, PH) the colour of the mouth was noted as blue grey.

A summary of the subspecific plumage differences is presented in Table 4.

TABLE 4
Summary of description of the plumage of subspecies of *Glaucidium tephronotum*

	Spots (underside)	Flanks	Wings	Dorsal view
tephronotum	elongated oval, rufous	rufous	dusky grey-brown with dull-brown bars becoming whitish-buff towards margins of inner webs	dark slate-grey
pycrafti	round-oval, dark brown/black	whitish-buff with little rufous	blackish/dark brown with umber-brown bars becoming whitish-buff towards margins of inner webs	dark umber-brown
medje (incl. *lukolelae*, *elgonense*, and *kivuense*)	drop-shaped, blackish	deep rufous	blackish brown with whitish areas on inner webs and dusky bars; the colour of these bars varies from rufous fading to pale brown, being hardly visible in some birds	uniform deep dark grey in full adult birds

Juvenile birds (from Democratic Republic of Congo):

Downy young undescribed; down probably white. This is replaced by a white juvenile plumage (2 birds in KMMA: 18365, Buta undated; 47.594 Paulis 1949), which changes rapidly to an "immature" dress (3 birds in KMMA: 91.111, Bolombo-Buya 5 April 1956; 82747, Ikela 30 June 1956; 79.098, Lubumba, Kivu 9 October 1955); differing from the adult plumage as follows: underparts white, sparsely streaked blackish (3–5 mm long) to feather tips (only 2 streaks 7–8 mm long in the specimen of 5 April); no rufous on flanks (only a small amount of rufous on flanks: Zimmerman 1972), thighs and tarsi pale rufous or with a very small amount of rufous.

Taxonomic conclusion

Our study points to the existence of two distinct populations: smaller West African birds with very light rufous spots on the underparts, and larger eastern birds with dark brown, blackish or black spots. Within the western group, the specimens from Cameroon can be distinguished from those from the Upper Guinea forest block (nominate *tephronotum*) by their constant colour difference and we therefore agree with the recognition of these as a separate taxon *pycrafti*. The colour variations within the eastern group, on the other hand, are not geographically localised and we consider the more rufous birds, such as the type of *elgonense* (KMMA 115.895) and the specimen from Boende (KMMA 36.285), as rufous forms, a phenomenon not uncommon in owls. We therefore consider all eastern birds to form a single taxon, *medje*; the forms *lukolelae*, *kivuense* and *elgonense* are to be considered as synonyms of *medje*.

Our conclusion is that Red-chested Owlet comprises three subspecies: nominate *tephronotum* Sharpe in West Africa (Sierra Leone, Liberia, Ivory Coast and Ghana), *pycrafti* Bates in Cameroon and *medje* Chapin (including *lukolelae*, *elgonense* and *kivuense*) in Central Africa (Congo-Brazzaville, Congo, Rwanda, Uganda and Kenya). Further study is required (e.g. on vocalisations) to decide if the western and the eastern forms indeed form one species.

Habitat, diurnal and altitudinal occurrence

This owlet is at times diurnal, as shown by eight birds recorded or collected: 1 at about 0700 h, another at 1115 h, 2 birds about midday, 1 during daytime and 4 in late afternoon, including one before a tropical storm (see also Chapin 1939: one at 1500 h on a rainy day). There may be sexual difference in activity pattern and/or habitat because all the birds collected during day-time were males. All the recorded birds occurred at a height of 3–4 m in secondary forest or cultivated areas in the vicinity of human settlements, near local roads or paths. In some cases the presence of this owlet during daytime was discovered through the noise made by small birds mobbing it (Bates 1911a) or revealed by the alarm calls of Garden Bulbuls *Pycnonotus barbatus* or other small birds (PH, pers. obs.).

According to several authors (Chapin 1932, Bannerman 1934, Granvik 1934, Friedmann & Williams 1970, Prigogine 1971, Zimmerman 1972, Grimes 1987, Taylor & Taylor 1988) females were trapped or shot in "mature forest, thick forest, across forest road, *galerie forestière d'altitude*, heavy forest (Kakamega), calling or heard in undisturbed forest, in the undergrowth in both primary forest and areas where trees had been heavily exploited".

Nine birds from Kivu were recorded between 950 and 2,040 m (Prigogine 1971, Verheyen 1946: KBIN) and one at 1,900 m in Rwanda (KBIN); according to Britton (1980) the maximum altitude is 2,150 m.

Food and body mass

This owlet feeds largely "on small animals including rats, birds and insects including bugs" (*BoA*), frogs, snails (Eisentraut 1963), seeds (Friedmann & Williams 1968) (possibly from a songbird gizzard ?), butterfly eggs and (recorded twice) a rat (40 g) (Equateur, Democratic Republic Congo). We cannot agree with Burton's (1984) judgement that this owlet attacks mammals and birds "considerably bigger than itself". The masses of the two males (with a rat of 40 g in their stomachs) were 111 g and 115 g. Friedmann & Williams (1970) and Zimmerman (1972) recorded 103 g and 100 g for females. It is necessary to bear in mind the mass of food items when estimating body mass of the owls, and also possible differences between male and female owls (see analysis and discussion in Kemp 1989).

Breeding and moult periods

In West Africa egg laying occurs in late February (Ghana) or earlier, as one immature male was recorded in Cameroon in wing moult (score left 29-right 22 points) on 30 January (ZFMK 61.1492). Adult birds may replace wing feathers some months later, as one male in Liberia scored 17 on 27 June. Birds in non-breeding condition were recorded in August (ovary 9 mm), September (testes 3 mm), January (one male, one female) and March (testes 9 mm).

In Central Africa the breeding seasons are somewhat different. For the purpose of this paper the Ubangi, Equateur, Uele and Ituri districts in the Democratic Republic of Congo are lumped to form one zone. In this large subdivision, juvenile birds were recorded on 5 April and 30 June, birds in active wing moult on 19 May (score 47) and 30 July (score 18) while 3 birds in fresh plumage and 4 others with slightly worn wing tips were found in the period May to July (one in Kasai in August). Thus breeding takes place from March to May, a few months later than in West Africa. One bird was in interrupted moult in June (score 35).

Another zone contains the more easterly localities in the Kivu province of the Democratic Republic of Congo, Rwanda, Uganda and Kenya. One female in breeding condition (ovary 30 × 25 mm) was collected in mid April (Kivu), one juvenile female recorded early July (Kenya) and two immatures with slightly worn wing tips on 23

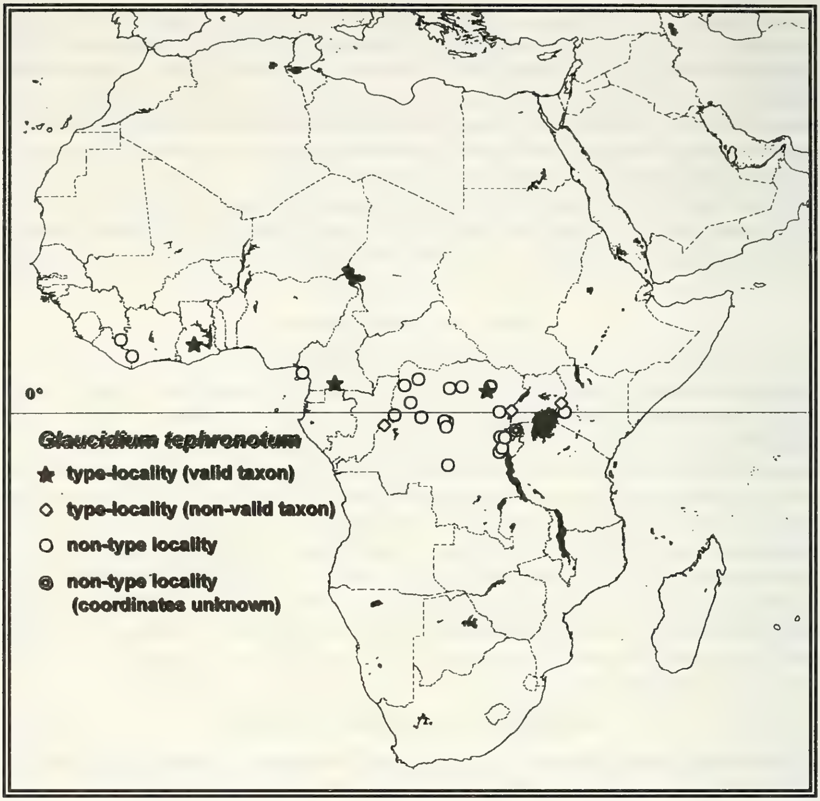
0°
Glaucidium tephronotum
★ type-locality (valid taxon)
◇ type-locality (non-valid taxon)
○ non-type locality
◎ non-type locality (coordinates unknown)

Figure 1. Localities of *Glaucidium tephronotum* specimens examined. Types of nominal (diamonds) and accepted (stars) subspecies; other specimens: open circles.

September and 9 October (Kivu). Six birds in non-breeding condition were collected in Uganda between 11 July and 10 December (4 in November) and one female in Kivu late December (fresh). Six males in fresh plumage or with slightly worn wing tips were obtained in the Kivu from April (testes 4 × 5 mm) to June, October and January, while one male from Rwanda and one from Kenya, both in March, showed slightly abraded wing tips. This would imply that in the eastern part of Africa breeding also occurs in April or May, perhaps a little later, but juveniles and specimens in wing moult are lacking to confirm this.

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Ornithological surveys in the Cordillera Cocapata, depto. Cochabamba, Bolivia, a transition zone between humid and dry intermontane Andean habitats

by Sebastian K. Herzog, Jon Fjeldså, Michael Kessler & José A. Balderrama

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Recent studies of avian diversity in South America have mainly focused on lowland rainforest and Andean foothills. The analyses by Stotz *et al.* (1996) emphasize the sub-Andean zone as a priority for research and conservation in the light of the habitat changes which are occurring there today. However, this priority does not adequately consider the habitat loss which took place in the past at much higher altitudes. Fjeldså & Kessler (1996) suggest that Andean habitats above 3,500 m have been strongly influenced by man since early post-glacial times, and that less than 5% of the potential humid woodland habitat is left in this altitudinal zone. In general, the timberline is suppressed by at least 500 altitudinal metres, due mainly to the excessive use of fire to maintain open pasture habitats (Kessler 1995). This widespread degradation and lowering of the timberline in the tropical Andes has led to a considerable decline in population size of many bird species restricted to this ecotonal habitat (Kessler & Herzog 1998).

Other areas with a strong and long-lasting human influence are the montane basins (e.g., Cuzco, Cochabamba) and in particular the transition zone from the humid east-Andean slope to the rainshadowed intermontane valleys. In such places, the highest intensity of human use is centered around the most productive zone on the transition from the strongly mist- influenced upper slopes to the often dry lower slopes and valley bottoms (*cf.* Huston 1994: 559). These transition zones, which have the best-developed soils and most benign climate, have played a special role in the development of past high-Andean cultures and today appear completely devoid of natural vegetation. This habitat conversion took place largely in pre-Colombian times and therefore is often disregarded (Kessler & Driesch 1993, Chepstov-Lusty *et al.* 1998).

It is of particular interest in this respect that the centres of human cultures in the Andes are often immediately adjacent to peak concentrations of species with restricted distributions. Human settlement and the survival of relict avian taxa may depend on similar ecoclimatic factors (Fjeldså & Rahbek 1999). Using long-term series of meteorological satellite images, Fjeldså *et al.* (1998) found these areas to be characterised by low interannual climatic variability caused by orographic moderation of the climate. Such a situation appears to exist in extreme northern Cochabamba and adjacent La Paz, Bolivia, where the Tunari highland, its northern projection Cordillera Cocapata and the outlying Cordillera de Mosetenes provide shelter against the impact of south polar winds which, albeit brief, have a severe ecological impact in the lowlands and along the humid east Andean (yungas) slopes (Fjeldså *et al.* 1998). Such impacts are assumed to have been a principal cause of vegetational changes in tropical South America during the Pleistocene (Servant *et al.* 1993).

As satellite images and topographic maps showed considerable forest tracts adjacent to intensively cultivated land just north of the Tunari/Cocapata highland, we concluded that this area would be worth a closer study, both in terms of possible new avian taxa and from a conservation perspective. No detailed ornithological data existed from this area apart from specimens collected by G. Garlepp, who reached Cocapata in 1892 from the humid subandean zone, and the type specimen of *Ramphomicron microrhynchum bolivianum*, collected in 1980 by C. Cordier (Schuchmann 1984, Paynter 1992). We here present noteworthy results of ornithological studies in April (SKH), May (all four authors) and November (SKH and JAB) 1997 as well as June 1998 (SKH and JAB) in the Cocapata area.

Study area and itinerary

The Tunari highland north of the city of Cochabamba comprises rugged high-Andean grassland (puna) terrain at 4,000–5,000 m and ends in a jagged northward projection, Cordillera Cocapata (4,200 m), which separates wet, uninhabited outer yungas slopes from the intermontane valleys of the Cotacajes drainage. The study area was situated c. 100 km NW of the city of Cochabamba at the end of a dirt road (Fig. 1). Owing to the benign climate of the Cotacajes drainage, all slopes receiving morning sun had been converted to bushy pasture and agricultural fields. However, humid forest remained on west- and south-facing slopes.

The principal study areas were surveyed intensively from dawn until sunset, walking along trails or randomly through the habitats where

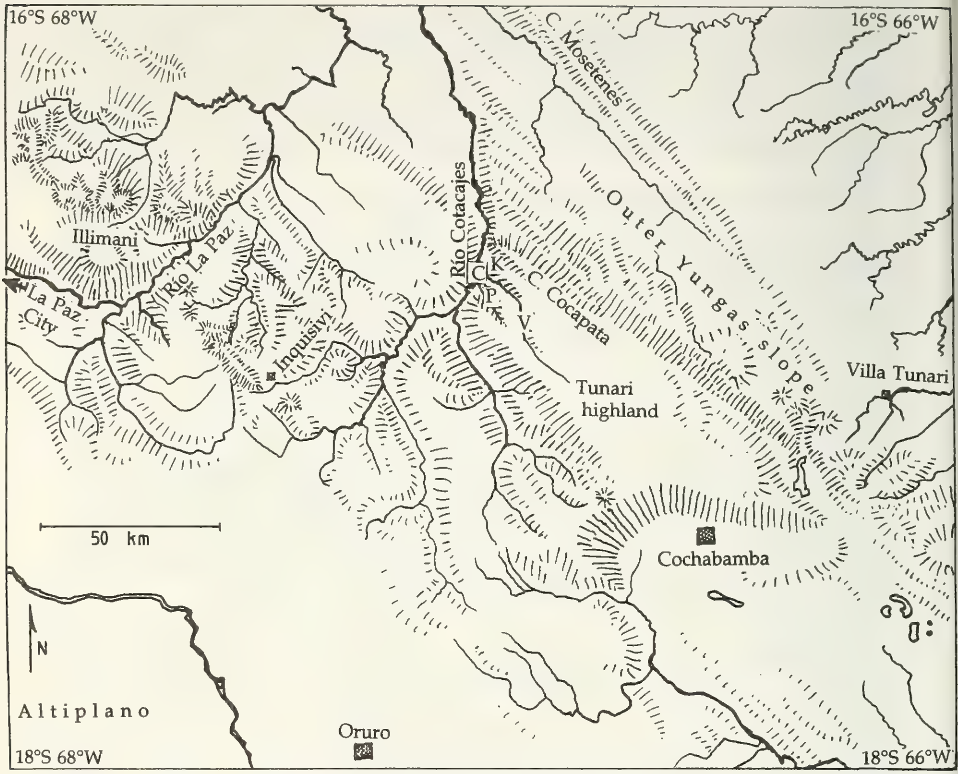
16°S 68°W
16°S 66°W
C. Mosetenes
Outer Yungas slope
Río Cotacajes
C
K
P
V
C. Cocapata
Illimani
Río La Paz
La Paz City
Inquisivi
Tunari highland
Villa Tunari
Cochabamba
50 km
N
Altiplano
Oruro
18°S 68°W
18°S 66°W

Figure 1. Map of the study area indicating rivers and main topographic features. Locality descriptions are given in the text for C=Cotacajes, P=Pujyani, K=Kori Mayu and V=Casay Vinto.

possible. Most documentation was by tape-recording, but specimens were collected selectively by shooting and low intensity mist-netting. Tape recordings (by SKH) will be deposited at the Cornell Library of Natural Sounds in Ithaca, New York. Specimens are deposited at Collección Boliviana de Fauna in La Paz and the Zoological Museum of Copenhagen.

Survey sites

(1) *Cotacajes*, depto. Cochabamba, prov. Ayopaya (16°46′S, 66°44′W). A tiny village at the bank of the Río Cotacajes (border to depto. La Paz) at 1,300 m; 26 April, 15–20 May and 12–16 Nov. 1997. The valley bottom was dry upwards from 2 km N Cotacajes with severely degraded dry scrub, whereas our study area at 1,600–2,100 m contained moderately to severely degraded dry forest of 5–8 m height dominated by *Acacia macracantha* and

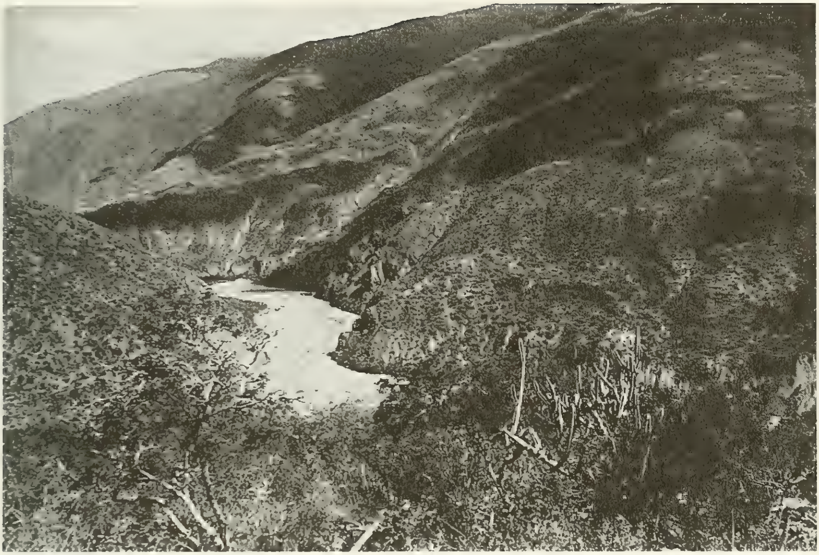

Figure A. General view of the dry forest zone in the Río Cotacajes valley from about 2,000 m along the road from Cocapata to Cotacajes, showing the rather open forest structure (visible on the slopes in the background) and the prevalence of columnar cacti (*Cereus huiluncho*) in the foreground.

Prosopis sp. (Fig. A). However, scattered individuals of *Schinopsis brasiliensis*, *Aspidosperma* sp. and *Jacaranda mimosifolia* indicated that the natural vegetation of the area would have consisted of 10–15 m tall semi-deciduous forest. Due to heavy overgrazing by cattle and goats the understorey was often rather open and dominated by unpalatable species such as *Croton* sp., *Puya* spp. and various cacti (*Pereskia weberiana*, *Samaipaticereus inquisivensis*, *Cereus huilunchu* and *Opuntia* spp.). Epiphytic plants were rather weakly developed and consisted mainly of athmospheric *Tillandsia* (*T. streptocarpa*, *T. tenuifolia*, *T. bryoides* and others), the climbing ferns *Microgramma vacciniifolia* and *M. squamulosa* as well as scattered orchids and abundant lichens. At its upper limit (>2,000 m) the forest acquired a more mesic character and became more diverse with several leguminaceous species and almost pure patches of an unidentified Myrtaceae. The understorey was locally quite dense with weedy composits and Acanthaceae, while the epiphytic plants were represented by green tank bromeliads (mixed with the grey ones mentioned above), ferns, orchids, some Araceae, a few cacti (including the narrowly endemic *Lepismium paranganiense*) and some mosses and hepatics.

(2) *Pujyani*, depto. Cochabamba, prov. Ayopaya (16°47′S, 66°42′W). 26 April, 6–19 May and 15–17 Nov. 1997, 27–30 June 1998. In the

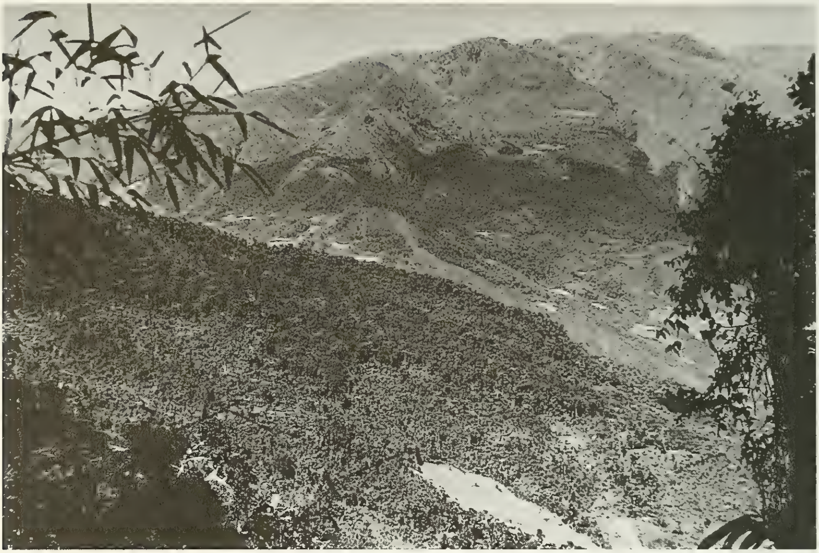

Figure B. Partial view of the Pujyuni study site (foreground) showing the mosaic of mature forest, secondary forest and agricultural areas. In the background, the typical landscape zonation is evident, with a narrow forested belt at about 2,700 to 3,100 m, bordered below by a densely inhabited agricultural zone and above by artificial grasslands resulting from the burning of the *Polylepis* forest belt. Note the few remnant *Polylepis* trees visible on the slopes and near the summit of the mountain and along the ravine at right.

lower part of this study area (2,500–2,700 m) the forest had been converted mainly to corn fields and cattle pastures, but some steep slopes were more or less densely wooded (Fig. B). By interpolating tree height above and below, this zone would naturally have had the maximum canopy height, possibly exceeding 30 m. Due to past clearing, extensive cattle-grazing and many deep landslides, much of the remaining forest at this altitude consisted of secondary *Alnus* forest of up to 12 m height (25 m *Alnus* and Lauraceae trees in a less disturbed patch). The forest's open structure allowed an exhuberant development of climbing vines and lianas as well as tall and often spiny shrubs such as *Barnadesia* sp., making the forest nearly impenetrable.

With increasing elevation, forest cover augmented, although there were still large areas of secondary vegetation, particularly at 2,750–2,900 m. The forest types described below were spatially arranged as a mosaic of small (up to several ha) patches interspersed with different types of disturbed vegetation, which ranged from short-grass cattle pastures to weedy fields with *Cleome* sp. and abundant composites to dense thickets of *Barnadesia* spp., *Verbesina* sp., *Piper* spp., *Miconia* spp. and *Chusquea*. Some patches, which had been allowed to regenerate, sustained secondary forest trees of 5–10 m height, such as melastomes, *Piper* spp. and Myrtaceae. Scattered larger trees remained within these secondary vegetation types.

Above 2,700 m the forest could be classified as humid montane forest up to 27 m tall, dominated by *Weinmannia fagaroides* and *Cedrela odorata*. Palms (*Ceroxylon vogelianum*) were very rare, while *Podocarpus* was completely absent. Humidity increased from lower to higher altitudes, reaching a maximum in the cloud-condensation zone around 3,100 m. This increase was indicated by a parallel increase in abundance of epiphytes (mosses, liverworts, lichens, ferns, orchids, bromeliads, a few Araceae) and terrestrial herbs, especially ferns and tree-ferns. The forest varied with slope inclination and degree of human disturbance. Forest of gentle slopes had in part been logged selectively and was used for grazing cattle, causing the understorey to be generally open, locally only with mosses and some ferns. Some areas were strongly trampled by cattle while other parts, especially ridges, had few signs of recent grazing but may be grazed periodically. Forests on steep slopes were less disturbed but had a lower and naturally broken canopy and dense stands of *Chusquea* bamboo, due to frequent treefalls and shallow landslides.

Above 3,000–3,200 m humidity decreased and human impact increased again, here mainly in the form of fires. This led to the appearance of low (5–10 m) forest with *Clethra* sp., *Clusia* spp., Ericaceae, *Polylepis racemosa* and in even more degraded areas *Monnina* spp. and *Baccharis* spp. On higher mountains the forest continuum extended up to c. 3,500 m, showing a gradual transition to forest dominated by *Polylepis racemosa*.

(3) *Kori Mayu*, depto. Cochabamba, prov. Ayopaya (16°45′S, 66°41′W). 27 April and 1–2 May 1997. Due to interference from local inhabitants we had to vacate this survey area (camp site at 2,900 m) without detailed study of its avifauna and habitats. The forest appeared to be similar to the Pujyani locality, but probably more humid.

(4) *Río Cocapata at Casay Vinto*, depto. Cochabamba, prov. Ayopaya (16°52′S, 66°38′W). 3–5 May 1997. Steep (40–70°) west-facing slopes at 3,200–3,500 m above the river contained several patches of *Polylepis racemosa* forest mixed with various shrubs. The trees were covered in epiphytic bromeliads and liverworts (which is unusual for *Polylepis*). Adjacent slopes were covered by tall, apparently rarely burnt *Festuca* grassland, unlike the usual high Andes tussock grassland. Agricultural activities were largely restricted to shallower and especially to sunny north-facing slopes. These slopes and most areas between this locality and the villages of Kori Mayu and Cocapata were covered by a heavily grazed mosaic of cultivated potato and fallow fields, short-grass (mainly above 3,800 m) or tussock grassland and scattered patches of *Puya* bromeliads or degraded scrub. Some observations were also made in the small settlement of Casay Vinto with dense patches of flowering solanaceous bushes near houses.

Species accounts

BROWN TINAMOU *Crypturellus obsoletus*

This species was heard repeatedly in May and November in the Cotacajes dry forest, which is not its usual habitat (cf. Parker *et al.* 1996).

HOOK-BILLED KITE *Chondrohierax uncinatus*

A bird of the rare dark morph was seen several times up to 3,000 m altitude in May and June at Pujyani.

HORNED CURASSOW *Pauxi unicornis*

This rare and vulnerable species (Collar *et al.* 1992) was known by local people, who gave accurate descriptions of casques brought up by hunters from the enormous uninhabited and forested foothill zone NE of Cotacajes towards Cordillera de Mosetenes, which could be a stronghold for the species. Our survey areas, however, did not contain suitable habitat within the species' elevational range.

STRIPE-FACED WOOD-QUAIL *Odontophorus balliviani*

This little-known species was uncommon at Pujyani and also heard during our short visit at Kori Mahu. Small groups were heard (tape-recorded) but seen only briefly when flushed inside the forest or running across the road. One group was singing regularly at dusk in May from a slope with young secondary scrub above our camp at Pujyani, but the species was also heard from inside forest. The loud and bubbly song of the Stripe-faced Wood-Quail is similar to, but notably faster than, that of the Rufous-breasted Wood-Quail *O. speciosus* (vocalizations of both species are presented by Mayer, 1996), which generally occurs at lower altitudes than the former species. Neither in the Cocapata area, nor at any other of our Bolivian study sites, have we found both species at the same altitude. Our only record of *O. speciosus* in the Cocapata area was a pair heard singing in November by SKH in the Cotacajes dry forest from quite far down-slope, probably somewhere between 1,400 and 1,600 m.

MAROON-CHESTED GROUND-DOVE *Claravis mondetoura*

A male of this little known species was flushed by JF on 2 May 1997 at Kori Mayu. Bamboo, with which this species seems frequently to be associated (Hilty & Brown 1986, Fjeldså & Krabbe 1990, but see Herzog *et al.* 1997), was flowering locally in the whole area.

LARGE-TAILED DOVE *Leptotila megalura*

This was the only species of the genus *Leptotila* we recorded in the Cocapata area, where it was common at Cotacajes and uncommon at Pujyani. Surprisingly, we did not find the White-tipped Dove *L. verreauxi* in the Cotacajes dry forest. *L. verreauxi* is usually a common inhabitant of Andean dry forest throughout Bolivia and often sympatric with *L. megalura*, e.g., both in the La Paz valley further north and in parts of the dry valles region of the southern Bolivian Andes (Herzog *et al.* 1997, SKH and MK unpubl. data). In contrast to this sympatry, JF found a clear habitat separation between the two species in southern depto. Chuquisaca (see Fjeldså & Mayer 1996), with *megalura* occupying islands of evergreen or semi-evergreen forests and *verreauxi* the more widespread deciduous forest. Apparently, the distribution and ecological differentiation of these two closely related species do not follow a simple, easily predictable pattern but vary regionally.

GREEN-CHEEKED PARAKEET *Pyrrhura molinae*

All individuals observed (and collected) belonged to the nominate subspecies. Thus, the distinctive and recently described *P. m. flavoptera* (Maijer *et al.* 1998) is probably restricted to the upper parts of the Cotacajes drainage and the adjacent La Paz valley. Since there appear to be no ecological or geographical barriers separating the two forms in the Cotacajes drainage (*P. m. flavoptera* has been found 30 km to the SW in the same valley system in similar habitat by N. Krabbe (Borgtoft *et al.* 1999)), the factors determining the distribution and differentiation of the two subspecies remain unknown.

RUFOUS NIGHTJAR *Caprimulgus rufus*

One individual was heard singing by SKH after dusk on 12 November 1997 at 2,050 m in the Cotacajes dry forest, which represents the second observation from depto. Cochabamba as well as a new altitudinal record for the species (see also altitudinal records below). The first record for depto. Cochabamba was obtained by SKH on 22 September 1997 below Cerro Leñe in the northeastern corner of Parque Nacional Carrasco (17°23′S, 64°24′W), where a single bird was tape-recorded inside primary, unbroken, humid lower foothill forest at 500 m. Humid foothill forest is quite an unusual habitat for this species which, in Bolivia, generally inhabits drier and more open forest and woodland habitats in the chaco, cerrado and valles regions (Armonía 1995, Parker *et al.* 1996).

BLUE-CAPPED PUFFLEG *Eriocnemis glaucopoides*

This generally rare and local species was fairly common in May both at the Río Cocapata and Pujyani and was collected at both sites. However, it was not observed during the shorter November visit. These are the northernmost records for the species, and the record at 3,400 m at the Río Cocapata also represents an upward altitudinal range extension by 500 m (cf. Fjeldså & Krabbe 1990, Parker *et al.* 1996). S. Maijer (pers. comm.) had previously found the species as far north as Cerro Chojna Khota (16°52′S, 67°13′W) near Inquisivi, prov. Inquisivi, depto. La Paz, where he observed two males in a humid forest clearing at 2,900 m on 8 December 1993. This represents the first observation of Blue-capped Puffleg in depto. La Paz (*cf.* Remsen & Traylor 1989, Armonía 1995).

PURPLE-BACKED THORNBILL *Ramphomicron microrhynchum*

Several birds displaying female plumage characteristics were seen in low shrubbery (mainly *Cleome* sp.) by JF at Kori Mayu and Pujyani, but never well enough to determine the subspecific affinity. Cocapata is the type locality for *R. m. bolivianum* (Schuchmann 1984) and the only known locality of this subspecies.

SCALED METALTAIL *Metallura aeneocauda*

A single individual seen on 4 May 1997 by JF at the Río Cocapata fills in a distributional gap between the nominate subspecies of the Peruvian yungas and La Paz, Bolivia, and the isolated subspecies *malagae* from Incachaca to Siberia, depto. Cochabamba. The subspecific affinity could not be determined in the field.

HOODED MOUNTAIN-TOUCAN *Andigena cucullata*

This near-threatened species (Collar *et al.* 1992) was surprisingly common in the Pujyani humid montane forest with at least ten individuals in the main survey area of about 2 km^2.

STRONG-BILLED WOODCREEPER *Xiphocolaptes promeropirhynchus*

Common at Pujyani, one or two individuals were also observed in May around 2,050 m in the Cotacajes dry forest, where this species is apparently sympatric with the Great Rufous Woodcreeper *X. major*. The song of probably the latter species was heard once in May by SKH from the lower half of the Cotacajes study site. In November the Great Rufous Woodcreeper was occasionally heard singing at Cotacajes and once seen by JAB at 2,050 m. However, *X. promeropirhynchus* was not observed in the dry forest in November.

SOOTY-FRONTED SPINETAIL *Synallaxis frontalis*

In September 1995 an undescribed subspecies of *S. frontalis* (to be described separately) was found by SKH and MK in the upper Cotacajes drainage near Inqusivi (16°54′S, 67°09′W). Similar individuals were also found (collected and tape-recorded) in the Cotacajes dry forest. Here, around an altitude of 2,000 m, *S. frontalis* was syntopic with *S. azarae* (*superciliosa*), with *frontalis* occupying the drier forest below and *azarae* the more mesic forest above 2,000 m and the two differed vocally.

The primary vocalization (song) of both species is a nasal, two-noted "ka-kweek", in which the second note is slightly higher-pitched and longer in duration than the first note. A frequency analysis, however, showed that the song of *frontalis* was higher in pitch than that of *azarae* (frequency range of "typical" songs 4.3–6.0 kHz *vs.* 3.5–5.2 kHz, respectively, an easily audible difference) and that both notes of the song of *frontalis* had a very similar or identical amplitude (volume), whereas in *azarae* the first note always had a significantly lower amplitude than the second note. Additionally, each species had its "own" vocalizations that were not heard from their congener. *S. azarae* uttered series of scratchy, somewhat rubbery and nasal "prrt" notes occasionally interspersed with a fast, nasal "kweek-kweek" or "kweek-kweek-kweek". These vocalizations were also heard at Pujyani where *S. frontalis* did not occur. *S. frontalis* gave series of nasal and somewhat soft "tweet" calls with some variation in tone and pitch.

BOLIVIAN SPINETAIL *Cranioleuca henricae*

Observed at 1,800–2,050 m in the Cotacajes dry forest in May (in mixed feeding flocks) and November (when also collected and tape-recorded; territorial pairs and an apparently single bird joining a mixed flock moving through its territory). This represents the first record of this recently described species (Maijer & Fjeldså 1997) for depto. Cochabamba as well as the lowest altitudinal record.

LIGHT-CROWNED SPINETAIL *Cranioleuca albiceps*

Both the white-crowned northern subspecies (*C. a. albiceps*) and the buff-crowned southern subspecies (*C. a. discolor*) were found and collected in the Pujyani survey area. Intermediate individuals were also collected. These subspecies have previously been thought to be separated by the La Paz/Cotacajes drainage system (Fjeldså & Krabbe 1990), but our findings suggest an introgression of *albiceps* into extreme northern Cochabamba. Vocally, both subspecies appeared to be similar.

SHORT-TAILED ANTTHRUSH *Chamaeza campanisona*

Several singing individuals were observed (tape-recorded) in November around 2,050 m in the most humid part of the Cotacajes dry forest, which is presumably not its usual or preferred habitat (*cf.* Ridgely & Tudor 1994, Parker *et al.* 1996). Here the species appeared to favour forest with dense understorey and patches of dense scrub. At Pujyani this species occurred to at least 2,800 m (see altitudinal records below) and was sympatric with the Barred Antthrush *C. mollissima*.

SCALED ANTPITTA *Grallaria guatimalensis*

This species was observed only in November in dry and humid forest up to 2,800 m (where replaced by Undulated Antpitta *G. squamigera*). The intensive survey effort in May and repeated observations of the other *Grallaria* species during this time indicate that the species may have been absent or at least rare in May, suggesting local migration.

SUIRIRI FLYCATCHER *Suiriri suiriri*

One or two were tape-recorded on 17 May 1997 in the Cotacajes dry forest, but the species was not encountered in November, suggesting that the birds observed in May represented austral migrants. As the birds were heard only, the subspecific affinity could not be determined. The Suiriri Flycatcher has also been found even further north in the Andes at Cerro Asunta Pata (15°03′S, 68°28′W) in depto. La Paz by SKH, where two birds were tape-recorded (but not seen) on 22 June 1997 at 1,350 m in evergree forest. This probably represents the first record of this species for depto. La Paz (*cf.* Remsen & Traylor 1989, Armonia 1995, Chesser 1997) and the northernmost observation for the Andes. These individuals are also believed to represent austral migrants.

HIGHLAND ELAENIA *Elaenia obscura*

This species was observed only in November in the dry forest, where it was common at 2,000–2,100 m. Its apparent absence in May suggests local movements. Despite the presence of suitable habitat, especially in the lower part of the Pujyani study site, located well within the species' altitudinal distribution, it was not encountered here.

Cnemotriccus sp.

An apparently undescribed species, closest to the Fuscous Flycatcher *Cnemotriccus fuscatus*, was found to be uncommon in the dry forest at 1,650–2,050 m. Three specimens were collected. This form had previously been collected in depto. La Paz in 1938 by the Olalla family (see Fjeldså & Krabbe 1989, where these specimens were erroneously referred to *C. fuscatus bimaculatus*) and in 1993 (S. Cardiff and J. V. Remsen, in litt). The taxon will be described and named elsewhere.

RUFOUS-BELLIED BUSH-TYRANT *Myiotheretes fiscorufus*

This near-threatened species (Collar *et al.* 1992) was surprisingly common in the Pujyani humid montane forest with up to ten individuals along a 2 km stretch of road.

WHITE-TAILED SHRIKE-TYRANT *Agriornis andicola*

An individual seen on 3 May 1997 by SKH and MK represents the first observation of this threatened species (Collar *et al.* 1992) for depto. Cochabamba (*cf.* Remsen & Traylor 1989, Armonía 1995). It was perched openly on a *Puya* inflorescense on a slope with a large *Puya* population along the road between Casay Vinto and Cocapata at about 3,500 m.

BLUISH FLOWERPIERCER *Diglossa caerulescens*

Several sightings of this species in the Pujyani humid montane forest in May 1997 by SKH and JF represent the first observations of this species in depto. Cochabamba (*cf.* Remsen & Traylor 1989, Armonía 1995).

Diglossa sp.

An apparently all black flowerpiercer, which almost certainly represents an undescribed taxon, was seen several times in the Pujyani humid montane forest between 2,700 and 3,100 m in May 1997 by all four authors. Size and shape suggested that it may be related to the Moustached Flowerpiercer *D. mystacalis* which, albeit being common in comparable habitat further north and south, has not been recorded in the study area. Birds were always in pairs in mixed foraging flocks in the upper canopy. No specimen has yet been collected.

THICK-BILLED SISKIN *Carduelis crassirostris*

A single juvenile was seen by SKH and JAB on 30 June 1998 at 2,600 m in secondary humid scrub in the Pujyani survey area. The bird was apparently moving uphill but paused for about one minute, perching openly 5 m up on top of the vegetation and giving a few single-note calls. This uncommon and local species inhabits *Polylepis* woodlands and arid montane scrub at altitudes above 3,000 m (Ridgely & Tudor 1989, Fjeldså & Krabbe 1990, Parker *et al.* 1996). The bird was probably performing short-term altitudinal migration in response to a southern storm front with heavy rainfall and snowfall above 4,000 m (see O'Neill & Parker 1978), which had occurred from 23–26 June 1998 in the Cochabamba area.

OLIVACEOUS SISKIN *Carduelis olivacea*

This species was found only in November both in humid and dry forest. In the dry forest a group of three and a single female were seen perched in the canopy, whereas at Pujyani several flocks of up to 20 birds were observed moving through the upper level of semi-open and moderately degraded forest. The Hooded Siskin *C. magellanica*, of which *C. olivacea* may only be a subspecies (see Ridgely & Tudor 1989), was common in the Casay Vinto area and not found at Pujyani, suggesting that the two taxa are separated altitudinally in the Cocapata area.

Discussion

We recorded 229 bird species in the Cocapata area, 86 of which were observed in the Cotacajes dry forest, 138 at Pujyani, 59 at Kori Mayu and 58 in the Casay Vinto area. Ten species (*Buteo magnirostris*, *Columbina picui*, *Claravis mondetoura*, *Uropsalis* cf. *segmentata*, *Colibri serrirostris*, *Patagona gigas*, *Coeligena torquata*, *Sappho sparganura*, *Catamenia inornata* and *Thraupis sayaca*) were present at Kori Mayu but not found at Pujyani, resulting in a total of 148 species for the humid montane forest zone in the Cocapata area. A complete species list including relative abundances and evidence is presented in Borgtoft *et al.* (1999).

Many species reached exceptionally high altitudes in the Cocapata area with the majority of them recorded at Pujyani, and a complete list of these species is presented below. The highest observed altitude is given in parentheses behind each species' name, followed by the previously known upper altitudinal limit. Unless indicated otherwise, previously known altitudinal limits are based on Ridgely & Tudor (1989), Fjeldså & Krabbe (1990), Ridgely & Tudor (1994), Armonía (1995) and Parker *et al.* (1996): *Chondrohierax uncinatus* (3,000/2,800 m, however, in Colombia rarely to 3,100 m, Fjeldså & Krabbe 1990), *Micrastur ruficollis* (2,800/2,600 m), *Geotrygon frenata* (3,200/3,000 m, but recorded up to 3,350 m in PN Carrasco, SKH and MK, unpubl. data), *Brotogeris chiriri* (1,850/1,200 m, but in the dry valleys of the Bolivian Andes reaching at least 2,350 m, see Herzog *et al.* 1997, SKH and MK, unpubl. data), *Caprimulgus rufus* (2,050/1,700 m), *Eriocnemis glaucopoides* (3,400/2,900 m), *Aulacorhynchus coeruleicinctus* (2,900/2,700 m), *Xiphocolaptes major* (2,050/1,800 m), *Chamaeza campanisona* (2,800/2,350 m, Fjeldså & Mayer 1996), *Scytalopus bolivianus* (2,500/2,300 m), *Mecocerculus hellmayri* (3,050/2,600 m), *Contopus fumigatus* (3,000/2,600 m), *Contopus cinereus* (2,850/2,200 m), *Myiodynastes chrysocephalus* (2,750/2,500 m), *Chiroxiphia boliviana* (2,600/2,500 m), *Sporophila caerulescens* (2,800/2,500 m), *Chlorospingus ophthalmicus* (3,050/2,600 m), *Hemispingus melanotis* (2,850/2,700 m), *Anisognathus flavinucha* (2,950/2,500 m), *Pipraeidea melanonota* (2,850/2,500 m), *Tangara xanthocephala* (2,700/2,400 m), *Tangara ruficervix* (2,850/2,400 m), *Tangara cyanotis* (2,800/2,200 m), *Basileuterus signatus* (3,050/2,800 m), *Psarocolius atrovirens* (3,000/2,800 m) and *Psarocolius angustifrons* (2,800/2,400 m).

We believe that our record of the resident avifauna is almost complete, at least for the main ecological zones of our study. The following species of humid yungas forest appear to be genuinely absent from our study area: *Oroaetus isidori*, *Adelomyia melanogenys*, *Heliangelus amethysticollis*, *Pharomachrus* spp., *Grallaria albigula* and *erythrotis*, *Thripadectes scrutator*, *Knipolegus signatus*, *Pachyramphus versicolor*, *Pseudotriccus ruficeps*, *Cinnycerthia fulva* and *Cacicus holosericeus*. It is more remarkable, however, how many humid-slope species were present, some of them even in the Cotacajes dry forest (mainly in humid ravines; *Crypturellus obsoletus*, *Penelope montagnii*, *Odontophorus speciosus*, *Columba fasciata*, *Hapalopsittaca melanotis*, *Amazona mercenaria*, *Chamaeza campanisona*, *Grallaria squamigera*, *Phyllomyias sclateri*, *Elaenia obscura*, *Mecocerculus leucophrys*, *Contopus fumigatus*, *Myiarchus cephalotes*, *Chlorospingus ophthalmicus*, *Chlorophonia cyanea* and *Carduelis olivacea*).

The following intermontane basin endemics were not found in the Cocapata area but, although not necessarily restricted to higher elevations, have isolated populations at the upper reaches of the Cotacajes/La Paz drainages: *Pyrrhura molinae flavoptera*, *Lesbia nuna*, *Asthenes heterura*, *Mimus dorsalis*, *Saltator rufiventris*, *Atlapetes fulviceps*, *Poospiza boliviana* and *P. whitii*.

The favourable ecoclimatic conditions north of the Tunari highland (maybe reaching up to northern La Paz) could explain the occurrence of an isolated population of *Ramphomicron microrhynchum bolivianum*, an endemic subspecies of *Synallaxis frontalis* as well as endemic species (*Cranioleuca henricae*, *Cnemotriccus* unnamed sp., *Diglossa* unnamed sp.) in our survey area.

In the Pujyani and Kori Mayu humid forest we recorded 148 species between 2,500–3,200 m with a survey effort of 41 observer days. In comparison, only 111 species were found within the same altitudinal range on the outer yungas slope above Villa Tunari 90–120 km to the SE. This latter figure is comprised of the combined number of species at two localities, namely western Parque Nacional Carrasco (17°11′–13′S, 65°40′–41′W, 2,500–3,200 m, two visits by SKH and MK, 16 observer days) and Tablas Montes (17°15′S, 65°10′W, 2,600–3,000 m, three visits by JF, 14 observer days, one visit by B. Hennessy (in litt.), 2 observer days). Our study area in the Cordillera Cocapata was 5–10 km away from the nearest wet outer yungas slope with ecoclimatic conditions similar to those above Villa Tunari.

The striking difference in species richness between the two areas is probably caused mainly by two factors. Firstly, the evergreen forest zone of Pujyani certainly receives much less precipitation than the extremely wet Villa Tunari area (present authors). Excessive moisture as observed in the Villa Tunari area is considered to have a negative impact on vegetation development (Ellenberg 1975). Moreover, less precipitation and hence less cloud cover at Pujyani cause higher temperatures, higher solar insolation and, provided the minimum amount of moisture necessary to maintain evergreen forest is present, higher productivity of the vegetation at the same altitude. This in turn allows the development of taller, structurally more complex forest which may allow many submontane bird species, whose elevational distribution may be determined by habitat structure rather than elevation *per se*, to reach exceptionally high altitudes at Pujyani (see above). Of course, a further reduction in precipitation would result in lower, more deciduous forest with a significantly lower bird diversity. Secondly, the proximity of other habitats (dry forest, barren intermontane and agricultural habitats), which are absent from the outer yungas slope, also contribute to the avian species richness in the humid forest. Species such as *Columbina picui*, *Sappho sparganura*, *Knipolegus aterrimus*, *Turdus chiguanco*, *Saltator aurantiirostris* and *Myioborus brunniceps* were not recorded in our survey areas above Villa Tunari but occurred at Pujyani and/or Kori Mayu.

The outer yungas slope to the NE of the Tunari highland, especially at the northern end of the Cordillera Cocapata, still supports a continuous altitudinal gradient from humid montane forest to high-altitude scrub and grassland and hence would be a highly interesting study area, even though access would be very difficult.

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Subspeciation in the Australian-endemic Great Bowerbird *Chlamydera nuchalis* (Ptilonorhynchidae): a review and revision

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The Great Bowerbird *Chlamydera nuchalis* is an endemic Australian polygynous species. It occurs across tropical northern and north-eastern Australia, from the western Kimberley of Western Australia eastward to the Queensland coast, and thence northward to Cape York on northern-most Cape York Peninsula, and southward in eastern Queensland to areas of the upper Burdekin River/Mackay (Fig. 1). It belongs to the only bowerbird genus adapted to relatively dry, sparsely-vegetated habitats, where it frequents riverine woodlands and vine thickets, eucalypt and melaleuca woodlands, open savannah woodlands and planted suburban areas.

Adult males and females have almost identical plumage, in variable warm greys to brown-greys throughout head, neck and underparts, with upperparts pale (in west and north) to dark (in east) blackish-brown, with extensive broad whitish tipping and edging to all feathers below the nape. Subadult to adult males and a few (? older) females have the upper nape supporting a nuchal crest of erectile silky pink feathers. Immatures and females of some populations show conspicuous ventral barring, particularly on the flanks, which is only faintly discernible on older birds and is absent on adult males. Plumages remain inadequately understood owing to insufficient numbers of specimens from several localities for each named subspecies, sex, age class, month, and because of complicating variation in plumage wear (Mayr & Jennings 1952). For detailed plumage descriptions, and/or illustrations of them, see Mayr & Jennings (1952), Marshall (1954), Gilliard (1969), Cooper & Forshaw (1977) and Donaghey (1996).

To facilitate easier comprehension of subsequent text a summary of more significant Great Bowerbird subspecies descriptions, and brief plumage diagnosis of them (after Gilliard 1969), follows. The

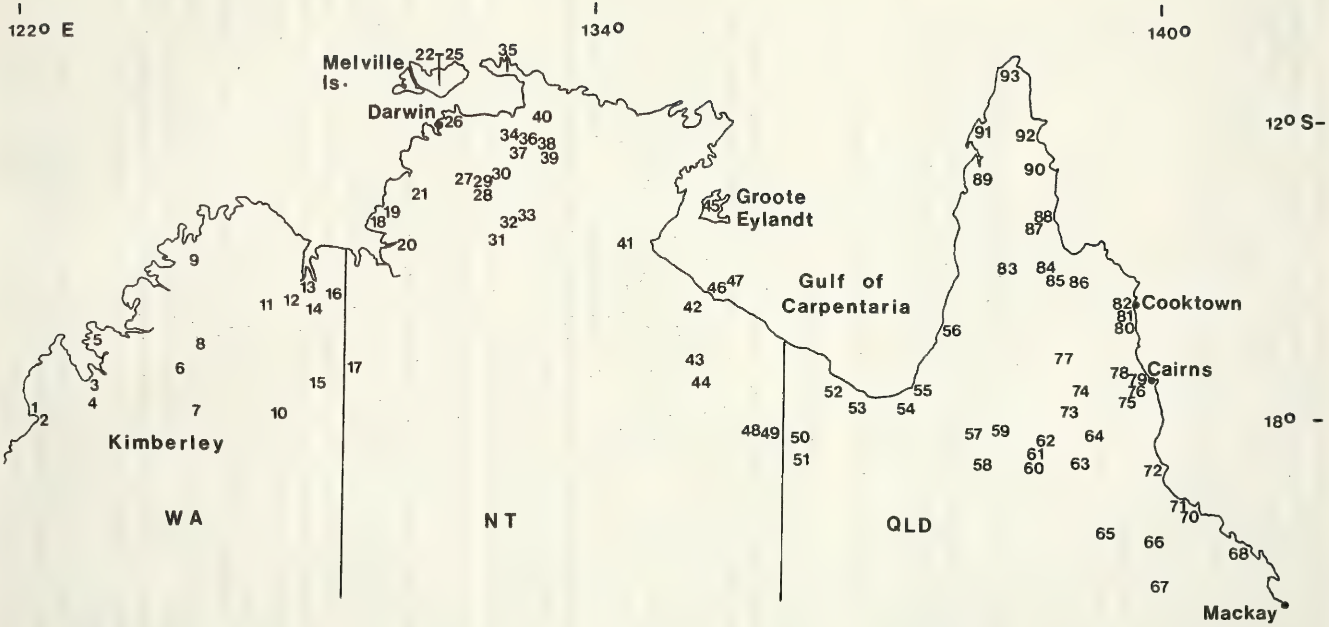
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Figure 1. Map of tropical northern Australia with the location of 242 Great Bowerbird skin specimens plotted from west to east. A single specimen is from each location unless a larger number is indicated in parenthesis after the following location numbers: 1 (3), 3(10), 4 (3), 7 (2), 8 (4), 9 (4), 10 (2), 13 (5), 14 (4), 17 (2), 21 (2), 22 (7), 23 (7), 25 (3), 26 (2), 29 (2), 30 (2), 32 (2), 34 (3), 35 (9), 37 (2), 39 (2), 40 (4), 41 (6), 42 (6), 43 (2), 45 (3), 46 (2), 48 (2), 51 (2), 52 (3), 54 (2), 55 (2), 56 (8), 58 (3), 59 (5), 64 (4), 65 (2), 67 (2), 68 (7), 70 (3), 74 (3), 77 (2), 78 (2), 79 (11), 81 (6), 82 (8), 83 (2), 87 (2), 89 (2), 93 (13). Locations 22–25 are on Melville Island and 46–47 on islands of the Sir Edward Pellew Group. WA=Western Australia, NT=Northern Territory, QLD=Queensland. See text.

erroneous transpositions of subspecies characters in Gilliard (1969), as noted by Hall (1974), have been taken into account.

C. n. oweni Mathews (1912): described from Point Torment (No. 3 on Fig. 1), western Kimberley, Western Australia. Like *nuchalis* but somewhat larger.
C. n. melvillensis Mathews (1912): described from Melville Island, off northern Northern Territory. Differs from *oweni* in being a little smaller and darker dorsally.
C. n. nuchalis (Jardine & Selby 1830): described (as *Ptilonorhynchus nuchalis*) from the type locality (as designated by Mayr & Jennings 1952) of Port Darwin, Northern Territory. Upperparts rather uniform and greyish; female generally uniform greyish below like males.
C. n. orientalis Gould (1879): described from Port Denison (No. 68 on Fig. 1), Queensland. Very different from *nuchalis* (and *oweni*) in having the upperparts more contrasting in variegated blackish and whitish markings; also females less uniform below, more inclined to barring and thus differing from males.
C. n. yorki Mayr & Jennings (1952): described from Utingu (No. 93 on Fig. 1) Cape York, Like *orientalis* but smaller and generally lighter in all plumages, particularly ventrally.

Rothschild (1898) considered *orientalis* invalid, even at the subspecies level. Mathews (1912) subsumed *C. n. orientalis* into the nominate subspecies, named *C. n. oweni* for the Kimberley birds and erected *C. n. melvillensis* for birds on Melville Island. Later he (Mathews 1930) adopted a similar scheme but merged his *melvillensis* into *C. n. oweni*. Hartert (1929) accepted *oweni* as having larger wings (186–193) than similarly plumaged *nuchalis* (173–186 mm).

Although ambiguously stated, Iredale (1950: 217) acknowledged the four subspecies *oweni, nuchalis, orientalis* and *yorki*. These were also accepted in the influential review of variation in Australian bowerbirds of Mayr & Jennings (1952) who, while conceding Mathews' characters for *melvillensis* as discernible, rejected this subspecies as "there is little difference between specimens from Melville Island and those from the mainland of Northern Territory, except that the latter average slightly larger." They concluded that geographic variation in the Great Bowerbird is "essentially clinal except for a 'step' between an eastern and western group, at the head of the Gulf of Carpentaria".

Marshall (1954: 90) and Keast (1961) followed Mayr & Jennings (1952) but noted that the subspecies are not "separated to anything like the extent exhibited by the eastern and western populations of the Spotted Bower-bird [*C. maculata*]". Mayr (1962) retained these four subspecies. Deignan (1964) considered Groote Eylandt and mainland Northern Territory birds to be *C. n. melvillensis*. Gilliard (1969) also accepted the subspecies *oweni, nuchalis, orientalis* and *yorki* and his treatment has been widely followed (e.g. Hall 1974, Cooper & Forshaw 1977, Blakers *et al.* 1984, Donaghey 1996). The few exceptions to this rule are noteworthy and are as follows: Storr (1973, 1984) acknowledged only nominate *nuchalis* and *orientalis* (*yorki*) in

Queensland. Ford (1974, 1987) accepted only *C. n. nuchalis* and *C. n. orientalis* for the species as a whole without discussion. Likewise, Storr (1977, 1980) did not mention *oweni* and treated all birds across the Kimberley and the Northern Territory as nominate *nuchalis*—a treatment also used by Storr *et al.* (1975), Smith *et al.* (1978) and Johnstone & Smith (1981).

There is thus no generally accepted subspecific taxonomy in *C. nuchalis*. Moreover, many authorities consider that, their own taxonomic usage notwithstanding, the apparently contiguous distribution of the species' populations, clinal nature of variation across it, and the weakly-differentiated nature of subspecies leave doubt about the validity of systematic recognition of intraspecific variation. Most recent authors have, however, retained *oweni, nuchalis, orientalis* and *yorki*, stating that these are weakly differentiated and/or that they clearly form a western subgroup consisting of the former two and an eastern subgroup consisting of the latter two forms. While not attempting to demonstrate or discuss this, a minority of recent authors apparently take this repeated observation as justification to reject *oweni* and *yorki* and thus accept only *nuchalis* in the west and *orientalis* in the east. Because of this we use below "western populations" for *oweni-nuchalis* combined and "eastern populations" for *orientalis-yorki* combined. The purpose of this study is to review and resolve the conflicts and doubts outlined above, to present evidence for and discussion of presently unsubstantiated opinion, and to offer our own conclusions in the light of the results of our examining considerably larger samples than previously studied.

Methods

We examined all sexed specimens from all recorded localities at or from (on loan to us) the following institutions: Queensland Museum, Brisbane; Australian National Wildlife collection, CSIRO, Canberra; Australian Museum, Sydney; Museum of Victoria, Melbourne; South Australian Museum, Adelaide; Western Australian Museum, Perth; American Museum of Natural History, New York; The Natural History Museum, Tring; National Museums & Galleries on Merseyside, Liverpool; Nationaal Natuurhistorisch Museum, Leiden; Staatliches Museum für Tierkunde, Dresden; Zoologische Staatssammlung, München; Museum Alexander Koenig, Staatliches Museum für Naturkunde, Stuttgart; Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt.

Measurements were taken by CBF: wing length is the flattened and straightened chord along a stopped ruler. Tail length is the maximum length of the longest tail feather from its point of entry into the skin to its tip, measured with an unstopped steel ruler. Other measurements were taken with electronic digital vernier calipers to the nearest whole decimal point. Bill length is that from the union of the bill with the foreskull to the tip of the upper mandible. Tarsus length is that from the intertarsus joint to the lower edge of the last undivided scute before the toes diverge. Where possible, all measurements were taken from each of 242 museum skins. Differences in mean values of wing and tail measurements between various subspecies combinations were tested for levels of statistical significance by Student's two-tailed *t*-tests.

The 242 museum specimens were taken from 92 different localities across tropical Australia. These were allocated locality numbers 1–93 for the purpose of plotting them on a map predominantly west to east, in numerically ascending order (Fig. 1 which lacks No. 69). For our analysis of biometrics of subspecies groupings we first deliniated the distribution of each according to plumage morphology and body size (wing and tail lengths).

Our larger sample notwithstanding, we appreciate that we are dealing with five (including *melvillensis*) named subspecies over a geographically extensive area. This, combined with inadequately understood plumages and complicated by variable plumage wear and unreliable sexing of earlier specimens (Hall 1974; Mayr & Jennings 1952; pers obs.), means that samples of each sex and age group for individual subspecies are inadequate. As a result, we do not separate the sexes or attempt to do so for age or for subgroupings based on relative plumage wear, but use the resultant large samples to derive means for measurements of entire geographic populations. As sexual size dimorphism in the species is but *c*. 4% (e.g. in the enlarged subspecies *C. n. nuchalis* accepted herein, 51 female wing lengths average 173 ± 6.98 SD mm and those of 85 males 180 ± 6.58 mm) this is not unreasonable.

To assess subspecies we compare the biometrics of all discussed taxa separately, and those of various combinations of named populations that constitute subspecies various workers consider valid.

Results

Of the 242 specimens, 84 were sexed as female. Among these, four birds had only 4–10 individual pink crest feathers present, two had a quarter-developed crest, 3 a third-, 1 a half-, and another a three-quarter-developed crest. We found no females with a fully developed nuchal crest.

Plotting of specimen locations resulted in subspecies distributions of localities 1–17 for *oweni*; 18–21 and 26–53 for *nuchalis* (birds from 16, 18, 21, 27 and 29 exhibited some characters intermediate between those of *oweni* and *nuchalis*); 22–25 for *melvillensis*; 52, 53, 54 for birds intermediate between *nuchalis* and *orientalis*; 55–76 for *orientalis*; 77–82 for birds intermediate between *orientalis* and *yorki*; and 83–93 for *yorki* (see text below and Fig. 1).

Variation within the western populations

The colouration and markings of birds of the east Kimberley are broadly intermediate between birds of the west Kimberley and those of Melville Island. Mathews (1912) correctly observed that Melville Island birds are dorsally darker and are smaller than typical *oweni* but, as Mayr & Jennings (1952) pointed out, these differ very little from *nuchalis* of the immediately adjacent Northern Territory mainland, other than being slightly smaller (Table 1). This difference in size is not statistically significant for wing length ($t_{86}=1.33$, $p>0.1$) but is significant for tail length ($t_{85}=3.88$, $p<0.001$). We concur with Mayr & Jennings (1952), Mayr (1962) and Gilliard (1969) in considering *melvillensis* a synonym of *nuchalis*.

The distributions of *oweni* and *nuchalis* are contiguous (Blakers *et al.* 1984) but as we found there exists coincidentally a geographically significant gap in the distribution of collected specimens (between localities 17 and 18), immediately to the east of the Western Australia/Northern Territory border (*c.* 129° 30′E—see Fig. 1), we use this in separating them for biometrical comparisons (Table 1). As several authors have done, we noted that one or two specimens from some localities (16, 18, 21, 27 & 29; Fig. 1) of eastern-most *oweni* and western-most *nuchalis* exhibit some plumage characters intermediate between the typical plumages of the two forms.

With *melvillensis* subsumed into *nuchalis*, the biometrics for birds of this taxon show *nuchalis* to average 5% smaller in wing and 7% smaller in tail length than *oweni* (Table 2). These differences are statistically significant (wing, $t_{132}=7.04$, $p<0.001$; tail, $t_{131}=9.95$, $p<0.001$). This should, however, be seen as part of a conspicuous cline in average size across the Australian tropics from larger western birds to smaller eastern ones (see Table 1, Fig. 2), particularly in view of the similar plumage in *oweni* and *nuchalis* (including *melvillensis*).

Variation within the eastern populations

The dorsal colouration and markings of *orientalis* and *yorki* are, as described by Mayr & Jennings (1952), darker and thus more variegated or contrasting in pattern, and the ventral plumage, particularly the flanks, more usually and strongly barred than in the western populations (*oweni* and *nuchalis*). As also noted by Mayr & Jennings, *yorki* average slightly paler, more so ventrally and particularly on the throat, and smaller than *orientalis* (Table 1). The differences in plumage colouration and pattern are slight but size differences are statistically significant in lengths of both wing ($t_{76}=7.61$, $p<0.001$) and tail ($t_{76}=7.64$, $p<0.001$). Excluding the intermediate individuals from the three Cooktown area localities (see above), typical *yorki* individuals average 5% smaller in wing length and 4% in tail length than *orientalis*. Despite the statistical significance, differences in size are no more than part of the conspicuous cline in size mentioned above (see Table 1 and Fig. 2).

The distributions of *orientalis* and *yorki* are contiguous (Blakers *et al.* 1984) but there exists a geographical gap in the distribution of specimens (locality 56 excepted) immediately to the south of Cooktown (between localities 77–79 and 80, at *c.* 16°00′S—see Fig. 1), which we use in separating them for biometrical comparisons (Table 1). We noted, like Mayr & Jennings (1952), that one or two specimens from some localities of northern-most *orientalis* and southern-most *yorki* exhibit some plumage characters intermediate between typical plumage of the two forms; the localities involved are 77 to 82, and particularly 80–82 (Fig. 1). Likewise, the few specimens from the head of the Gulf

TABLE 1
Measurements of specimens of subspecies, some subspecies combinations, and some intermediate specimens of the Great Bowerbird *Chlamydera nuchalis*

	oweni	*melvillensis*	*nuchalis*	*nuchalis* plus *melvillensis*	*orientalis*	*intermediate orientalis-yorki*	*yorki*
Mean wing length (n)	183 (46)	173 (18)	175 (70)	174 (88)	175 (52)	169 (30)	166 (26)
SD	6.0	5.3	7.0	6.7	5.4	5.3	6.4
range	171–196	164–182	158–189	158–189	162–186	158–179	155–179
Mean tail length (n)	152 (46)	137 (18)	143 (69)	141 (87)	134 (52)	133 (30)	128 (26)
SD	6.1	5.9	5.6	6.0	5.2	5.2	6.3
range	140–165	127–146	133–158	127 158	123–149	123–144	121–143
Mean tail/wing ratio (%)	83	79	82	81	77	79	77
Mean tarsus length (n)	48.7 (46)	47.4 (18)	47.3 (70)	47.3 (88)	46.4 (52)	45.3 (30)	45.2 (26)
SD	2.6	2.5	2.2	2.3	2.1	2.0	2.6
range	42.3–54.6	43.2–51.8	42.6–51.1	42.6–51.8	41.0–50.7	40.7–48.7	41.0–52.6
Mean tarsus/wing ratio (%)	27	27	27	27	27	27	27
Mean bill length (n)	38.8 (46)	38.1 (16)	38.3 (66)	38.3 (82)	37.8 (52)	36.8 (30)	38.1 (25)
SD	1.3	1.4	1.7	1.6	1.6	1.6	1.5
range	35.7–41.1	34.5–40.7	32.2–41.6	32.2–41.6	33.7–41.7	32.6–39.7	35.5–41.4
Mean bill/wing ratio (%)	21	22	22	22	22	22	23

TABLE 2
Measurements of specimens of the subspecies *nuchalis* (*oweni, melvillensis*) and *orientalis* (*yorki*) of the Great Bowerbird *Chlamydera nuchalis*

	nuchalis (*oweni, melvillensis*)	*orientalis* (*yorki*)
Mean wing length (n)	177 (134)	171 (108)
SD	7.6	6.6
range	158–196	155–186
Mean tail length (n)	145 (133)	132 (108)
SD	7.8	6.0
range	127–165	121–149
Mean tail/wing ratio (%)	82	77
Mean tarsus length (n)	47.8 (134)	45.8 (108)
SD	2.5	2.3
range	42.3–54.6	40.7–52.6
Mean tarsus/wing ratio (%)	27	27
Mean bill length (n)	38.5 (128)	37.6 (107)
SD	1.5	1.7
range	32.2–41.6	32.6–41.7
Mean bill/wing ratio (%)	22	22

of Carpentaria, (localities 52, 53, 54; Fig. 1), at the eastern extremity of the range of *nuchalis* and the western extremity of *orientalis*, exhibit some plumage characters intermediate between the typical plumages of these forms, as noted by Hall (1974).

Variation between the western and the eastern populations

We agree with Mayr & Jennings (1952), Gilliard (1969), and Hall (1974) that the two eastern subspecies share the plumage characters of darker and more brownish upperpart markings, contrasting more with the whitish tips, and with underparts typically less dark. Immature birds show distinct ventral barring, mostly on the flanks, while adults may show no barring at all. Equally significant in our view (see Discussion) is the fact that adult eastern birds (those of westernmost localities 58 and 59 excepted) typically, but not invariably, exhibit the conspicuous feature of extensive silky silvery-white feather tipping, or spotting, on at least the forecrown if not throughout the crown as well as bordering the pink crest in those birds so adorned.

Differences in average wing length between western *nuchalis* and eastern *orientalis* (*sensu stricta*) are not statistically significant ($t_{120}=0$, $p>0.1$) but in tail length are significant ($t_{119}=9.10$, $p<0.001$). This is part of a larger western to smaller eastern birds cline in overall size but not in body proportions (Tables 1 & 2; Fig. 2).

Differences in plumage and size (statistical significance notwithstanding) between the two western subspecies and between the two eastern ones are trivial. By comparison, the paler and less contrasting upperpart markings and uniform crown colour of adults in western populations, as opposed to the darker and more contrasting upperpart markings and the silvery-white feather tipping, or spotting, on the

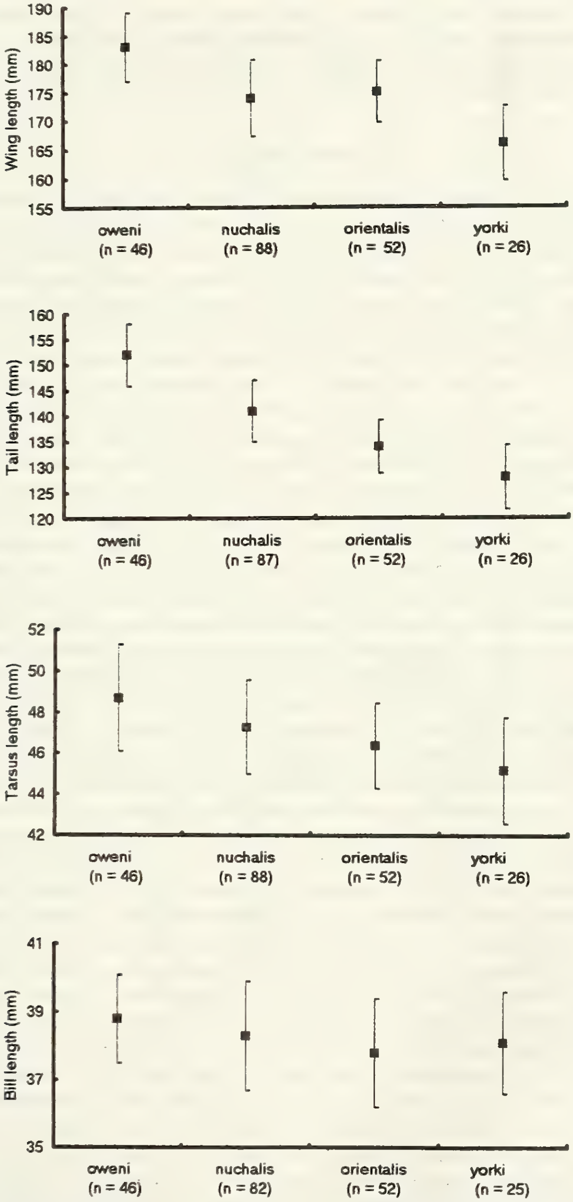

Figure 2. Mean measurements of Great Bowerbird subspecies *oweni, nuchalis, orientalis* and *yorki* plotted west to east and thence south to north as they are geographically distributed (see Figure 1) to show fundamental west to east cline in decreasing size. Vertical bars show standard deviations and samples sizes are indicated beneath each taxon. See text.

crown in eastern populations, are not trivial. Differences in size between enlarged *nuchalis* (including *oweni* and *melvillensis*) and *orientalis* (including *yorki*) adopted below are significant in both wing (t_{240}=7.40, p<0.001) and tail (t_{239}=14.62, p<0.001) length.

Discussion

Few land bird species distributed over both the Kimberley and Northern Territory are presently considered to show variation worthy of subspecific status between these two areas (e.g. *oweni* and *nuchalis*). Of the potential *c.* 170 species that occur there (Storr 1977, 1980; Blakers *et al.* 1984), only four possible exceptions might be considered: the Partridge Pigeon *Geophaps smithii*, Sandstone Thrush *Colluricincla woodwardi*, Long-tailed Finch *Poephila acuticauda* and the Grey Butcherbird *Cracticus torquatus*. Most authorities do not, however, acknowledge the weakly-differentiated variation between these populations as justifying subspecies rank. Only the Black Grasswren *Amytornis housei*, of the Kimberley, and the White-throated Grasswren *A. woodwardi*, of Arnhemland, have differentiated into species within the Kimberley-Northern Territory area. These species are, however, terrestrial, sedentary inhabitants of limited and isolated areas of specialized habitat. Intraspecific variation in birds between areas of tropical Queensland, north and south of the Cairns-to-Cooktown area, is more commonly acknowledged by subspecific status. This area of tropical Queensland includes, however, greater climatic and habitat diversity (Frith & Frith 1996) than the relatively uniform biota of the Kimberley-Northern Territory area.

Recent authors (Mayr & Jennings 1952, Marshall 1954, Keast 1961, Gilliard 1969, Schodde & Tidemann 1988) have cited the weakly-defined *C. nuchalis* subspecies, particularly within western and eastern populations, noting that plumage and size variation between them is basically clinal with geographically intermediate populations exhibiting intermediate morphology. Plotting locations of museum specimens demonstrates that few have been collected from areas intermediate between described subspecies, notwithstanding the species' presence in these areas (Blakers *et al.* 1984). Although there are statistically significant differences in sizes of some populations, the west-east cline in size is clear (Table 1 & Fig. 2). Moreover, larger numbers of specimens from the relatively great areas of habitat between subspecies might prove that apparent differences in size between these subspecies are artefacts of insufficient specimen collecting. In plumage, however, any perceived cline is clearly broken by the marked differences in dorsal plumage of adult birds between western *nuchalis* and eastern *orientalis*.

No one but Deignan (1964) has suggested resurrecting Mathew's (1912) *melvillensis* since Mathews himself (1930) subsumed it into *nuchalis*. However, the plumage of Melville Island birds is more diagnostically definable from that of mainland Northern Territory birds (*nuchalis*) than are plumage differences between *oweni* and *nuchalis*. Moreover, the difference in average lengths of wing and tail between *melvillensis* and *nuchalis* are no more or no less significant than those between *nuchalis* and *orientalis*. Thus if the four subspecies *oweni, nuchalis, orientalis* and *yorki* are acceptable, as by most authors, it is inconsistent not to accept *melvillensis*.

We agree with Mayr & Jennings (1952), Gilliard (1969) and Hall (1974) that the two western subspecies share the broad plumage characters of paler and less contrasting, more uniform and greyish upperparts and the underparts usually darker. Immature birds exhibit slight and faint ventral (mostly flank) barring (but stronger in some western *nuchalis* than in *oweni*), but adults less so or not at all. As significant, in our view (see above), is that adult western birds typically lack silky silvery-white feather tipping, or spotting, throughout the crown, (showing such feather tipping only immediately about pink nuchal crest feathers when present). Exceptions to this are the birds from the Gulf of Carpentaria (localities 54 and 55, see Fig. 1) that have a little silver tipping on the crown.

Variation in colouration and pattern of the crown between bowerbird populations feature most conspicuously as species and/or subspecies characters, particular in *Ailuroedus, Amblyornis* and *Chlamydera* (Gilliard 1969, Frith & Frith 1995, 1997a,b, 1998). While the subspecies of *C. nuchalis* most widely accepted are weakly differentiated because of the fundamentally clinal nature of variation in plumage and size, we find the marked difference in crown morphology between western *nuchalis* and eastern *orientalis* (as defined here) highly significant in combination with the equally marked difference in dorsal plumage colouration and pattern between them. We therefore conclude that only two subspecies should be recognised: *C. nuchalis* in Western Australia and the Northern Territory to the Gulf of Carpentaria in Western Queensland, and *C. n. orientalis* in the east and north-east of Australia. This treatment was repeatedly used by Storr (1967, 1973, 1977, 1980, 1984), Ford (1974, 1987) and by Schodde & Tidemann (1988). These two subspecies meet in the area of the head of the Gulf of Carpentaria, where the few specimens collected show some characters intermediate between them.

The acceptance of only two subspecies, *nuchalis* and *orientalis*, as reflecting variation within *C. nuchalis* accords well with the repeatedly expressed doubts about weak differences within the western and eastern populations and gives appropriate taxonomic weight to the far more obvious morphological "step" between these populations noted by Mayr & Jennings (1952) and reiterated by Gilliard (1969) and Hall (1974).

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Mirafra erythrocephala Salvadori & Giglioli, 1885, an older name for *Mirafra assamica marionae* Baker, 1915

by Carlo G. Violani & Fausto Barbagli

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While examining the zoological writings by Enrico Hillyer Giglioli (1845–1909), we discovered that the taxon *Mirafra erythrocephala* Salvadori & Giglioli, 1885, from Cochinchina, posed an identification problem.

This name is not mentioned by J. L. Peters (in: Mayr & Greenway 1960), while Sharpe (1890) dismissed it as a synonym of *Mirafra assamica*, adding the note "pt. hiem." (=winter plumage). The last mention of *M. erythrocephala* as a valid species was by Salvadori (1915). In the same year, Baker (1915) described *Mirafra assamica marionae* from Ayuthia, Central Thailand. This latter name was also employed by Delacour & Jabouille (1931) for the subspecies of *M. assamica* inhabiting French Indochina.

Mirrafra [sic!] *erythrocephala* was used again by Arrigoni degli Oddi (1924), listing the new taxa named by T. Salvadori; in 1986 *M.*

erythrocephala was listed in the Catalogue of the Bird Collection in Turin Museum (Elter 1986) and, recently, Barbagli & Violani (1996) equated *M. erythrocephala* to *M. assamica erythrocephala*, while reviewing briefly the bird taxa described by Giglioli and Salvadori from the material brought back to Italy by the corvette "Magenta".

In March 1996 we examined the two unsexed syntypes of *M. erythrocephala* Salvadori & Giglioli, collected in Cochinchina, in the Museo Regionale di Scienze Naturali, Turin, Italy (nos. UCC-M328-6090 and UCC-M503-8562, respectively specimens "a" and "b" of the original description). We compared specimen "a" with the types of *M. assamica* Horsfield, 1840 and *M. a. marionae* Baker, 1915, together with an adequate series of skins of these forms, in The Natural History Museum, Tring, U. K. From this we concluded that, based on plumage, the Turin birds agree perfectly with *M. a. marionae*, including specimens from Cochinchina. The measurements (mm) of the Turin birds are: exposed culmen 15, 12.5; wing (flattened) 80, 73; tail 46, 44: tarsus 27, 27 (for "a" and "b" respectively); these fall within measurements of *M. a. marionae* from the Tring collection. As reported by Salvadori & Giglioli (1885), the Turin birds differ from nominate *assamica* in their "slightly smaller size, the ashy colour of the upperparts more intense and purer, the underparts more whitish and showing the pre-pectoral spots more blackish and wider" [transl.]. In addition, *M. erythrocephala* also differs from nominate *assamica* in having "the crown feathers edged with rufous and a reddish superciliary stripe and cheeks" [transl.].

In view of the similarity between the Turin birds and *marionae*, and differences from the other taxon, we believe that *erythrocephala* is a synonym of *marionae*, and we propose the older name of *M. erythrocephala* Salvadori & Giglioli, 1885 for the taxon inhabiting Tenasserim, Thailand (except northern), Southern Annam, Cambodia and Cochinchina. Recently, Alström (1998) gave reasons why this taxon should be given full species status and should not be considered as a subspecies of *assamica*; we agree with his opinion on this point.

The syntypes of *M. erythrocephala* were part of the material gathered during the voyage of the Italian Royal corvette "Magenta" between 1865 and 1868. The naturalists Filippo de Filippi and Enrico H. Giglioli were responsible for the scientific collecting. Only two bushlarks were obtained, on different days and in different localities. From the voyage's account (Giglioli 1876), the "Magenta" called at Saigon from 4 to 11 June 1866, and the scientists gathered zoological material in nearby territory. Among the birds shot near Ba-lua on 10 June there was a "*Mirafra* sp.?"; this was presumably specimen "a" of the original description, whose exact locality and day of capture were not recorded in the printed diagnosis, nor on the bird's label. Giglioli does not mention the capture of the other specimen ("b"), which bears the inscription "Thu Duc" [a village 12 km N of Saigon] and the date June 1866 on its label, but he says that this place was briefly visited on 7 June, when several birds were collected. The two specimens of *Mirafra* arrived at Turin in February 1867, but they were only worked out scientifically eighteen years later (Salvadori 1915). On 6 January 1885 Salvadori (*in litt.*) wrote from Turin to Giglioli in Florence: "I wish to inform you that among the birds of Cochinchina I have found some novelties: the *Cissa*, a *Mirafra* and perhaps a *Prinia*. It will be convenient to start describing them immediately" [transl.]. The description was read during a meeting of the Accademia delle Scienze di Torino on 11 January 1885 (Barbagli & Violani 1996) by Salvadori and was published in the "Atti" of the same Institution under the authorship of both scientists. However, it is clear that their diagnosis was composed by Salvadori, who presumably compared the syntypes from Cochinchina with the two Himalayan specimens of *M. assamica* from the Solaroli Collection (nos. UCC-E60-4101 and UCC-E60-4102), also owned by Turin Museum (for the Solaroli Collection, see: Passerin d'Entrèves *et al.* 1995).

In the recent revision of the taxonomic status of the *Mirafra assamica* complex, Alström (1998) considers that the name *marionae* is pre-dated by *erythrocephala*, but nevertheless proposes that *marionae* should be conserved, as the other name "does not appear to have been used since it was introduced".

We do not agree with Alström's view, since the name bestowed by Salvadori & Giglioli was in fact used in 1915, 1924, 1986 and 1996 (as mentioned above), and the taxon description is perfectly valid.

It should be also noted that both syntypes of *M. erythrocephala* are in good condition and are available to scientists, being kept in a large museum; their locality and date of collection can be easily traced from documents, as shown above. Finally, we believe that such a choice of *marionae* over the older and valid name *erythrocephala* should be only sanctioned by a proper opinion of the International Commission on Zoological Nomenclature.

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The past status of the herons in Britain

by W. R. P. Bourne

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Britain now supports few species of heron compared to neighbouring countries in N. W. Europe. It seems likely that in the Middle Ages, when the climate was warmer (Reid Henry & Harrison 1988: 17) and there were more wetlands and fewer people, there may have been more. About 1595 Thomas Muffett reported that in addition to the Great Bittern *Botaurus stellaris* and Grey Heron *Ardea cinerea* they included the Black, White and Criel Heronshaws and Mire-dromble (Mullens 1912). An examination of records of that time (Bourne in press) suggests that these may have been the following species:

Black Heron. This was described about 1668 by Sir Thomas Browne (Stevenson & Southwell 1870: 145, Southwell 1902) as "black on both sides the bottom of the neck white gray on the outside spotted all along with black on the inside a black coppe of small feathers some a spanne long, bill poynted and yallowe 3 inches long. Back heron coloured intermixed with long white fethers. The flying fethers black. The brest black and white most black. The legges and feet not green but ordinary dark cork colour". This agrees with the Purple Heron *Ardea purpurea* except that the latter is more rufous. Apparently Browne's specimens, subsequently destroyed during an outbreak of the plague, were in poor condition, and Browne may have attributed the rufous colour to staining

White Heron. This was discussed by Stubbs (1910a), who cited some fifteen references to the consumption of up to a thousand birds at feasts between the 15th and 17th centuries. He deduces this must have been the Little Egret *Egretta garzetta*, later adding (Stubbs 1910b) that while it may sometimes have been imported, breeding-places were also specifically protected in 1564 (8 Eliz. c. 15). There is a good drawing of a white heron half the size of a Common Crane *Grus grus* in British Library ms. Roy. 19 B.xv, folio 37v., possibly from East Anglia about 1375 (Yapp 1981). Little Egrets have recently started to breed again in both Britain and Ireland (Lock & Cook 1998). Stubbs (1910b) also suggested that, in view of reports of a larger bird with no crest which may have interbred with Grey Herons, either the Great Egret *Egretta alba* and/or an albinistic Grey Heron may also have been present. While in modern times until recently Great Egrets bred no nearer than central Europe, they have now also started to breed in both the Netherlands and France (Marion 1999).

Criel Heron and Brewe. According to Furnivall (1868) a Crielle was a dwarf heron. The *Oxford English Dictionary* also gives Cryal or Criell Heron as an old name for egret, used by Samuel Johnson for a heron, though Muffett (Mullens 1912) listed the Heron and White and Criel Heronshaws separately. Possibly it was another species, the Brewe, often listed with the Egret at feasts and by the London Poulters from the 14th to the 17th centuries; it commanded a similar price to an Egret (Jones 1965). This has previously been identified as a wader (Stubbs 1910a, Gurney 1921) or the Black-headed Gull *Larus ridibundus* (Bourne 1996). While its name was spelt "Brewe" in Lisle Letters from Calais to England in the 1530s, what appears to be the same word is spelt first "bioreaux" and then "bihoreaulx" in local correspondence (Byrne 1981: 1183, 1384), implying that Brewe must be an English phonetic spelling of a French word, possibly for culinary purposes similar to beef, mutton or pork. If so, Christian Jouanin reports it can only be the Héron Bihoreaux or Night Heron *Nycticorax nycticorax*. A bone of this species has also been found in the area where the poulters kept their wares near London Wall (Harrison 1980, Jones 1965). It is clearly viable in Britain since feral birds of the North American race *N. n. hoactli* have bred at Edinburgh Zoo since 1951 (Lever 1977), and the nominate European race at Great Witchingham in Norfolk since they escaped during the great gale of October 1987 (Williamson 1998).

Mire Dromble. This is usually identified as the Great Bittern, but that species is included alongside the Mire Drumble by Muffett (Mullens 1912) and others in a number of lists. It might be the otherwise unrecorded Little Bittern *Ixobrychus minutus*, accepted as a lost British species by sceptical Alfred Newton (1893–96), but still found breeding occasionally (Holloway 1995).

Thus all the herons that now breed in NW Europe may have occurred in Britain until they became a favourite quarry for falconry and delicacies for the table under the disorderly rule of the Plantagenets (Table 1). It may be wondered why Brewes became so popular that they were sent by Lord Lisle to his nephew King Henry VIII, as a display of loyalty after the execution of Queen Anne Boleyn, in May 1536 (Byrne 1981, letters 698–9). While I can find nobody who has tasted a heron, together with some other famous delicacies, such as the Dotterel *Charadrius morinellus*, Ruff *Philomachus pugnax*, Knot *Calidris canutus*, Wheatear *Oneanthe oenanthe*, Ortolan *Emberiza hortulana* and Beccafico *Sylvia* sp., they are migrants which may put on much fat. The mean weight of the Night Heron was reported by Glutz von Blotzheim & Bauer (1966) to increase by 17% between July and August, which may explain why it became so tasty that it required "no sauce but salt" (Furnivall 1868).

Once order was restored under the Tudors, William Harrison reported (Holinshead 1586):

> "Alas, such is my small skill in foules, that to say the truth, I can neither recite their numbers, nor well distinguish one kind of them from another. Yet this I have by generall knowledge, that there is no nation under the sunne, which hath alredie in the time of the yere more plentie of wild foule than we, for so manie kinds as our Island dooth bring foorth, and much more would have, if those of the higher soile might be spared but one yeare or two, from the greedie engins of covetous foulers, which set onlie for the pot & purse. Certes this enormitie bred great trouble in K. Iohns daies, insomuch that going in progress about the tenth (year) of his reigne (1209), he found little or no game wherwith to solace himself, or exercise his falcons. Wherfore . . . he restrained all maner of hawking or taking of wild-foule throughout England for a season, whereby the land within few yeares was throughlie replenished againe. But what stand I upon this impertinent discourse? Of such therefore as are bred in our land, we have the crane, the bitter, the wild & tame swan, the bustard, the herron . . . beside diverse other, whose names to me are utterlie unknowne . . . As for egrets, pawpers and such like, they are daily brought unto us from beyond the sea, as if all the foule of our countrie could not suffice to satisfie our delicate appetites".

Waterbird conservation first appears to have been practiced in the Classical Greek city-state of Stymphalus, when it was mocked as a labour of Herculese (Bourne 1982). The activities of King John appear to have received less attention, and while the Tudors also made some attempt at conservation, it also did not last long (Datta 1998). Herons in particular appear to have been the favourite quarry of falconry, and its status at the end of the Tudor period is indicated by William Shakespeare in *Hamlet* (2.ii.373–5): "I am but mad north-north-west; when the wind is southerly I know a hawk from a handsaw" though it is also notable that apparently the compositor did not recognise "hernshaw". This implies, first, that the upper classes then knew a

TABLE 1
Possible past status of north-west European herons in Britain

		Britain	
Species	Nearest population	Past	Recent
Great Bittern *Botaurus stellaris*	Adjacent coasts Denmark to France	Common, lost XIX century	Return 1911 now declining
Little Bittern *Ixobrychus minutus*	Adjacent coasts low Countries, France	?	Occasional breeding
Night Heron *Nycticorax nycticorax*	Adjacent coasts Netherlands, France	Middle ages-?	Vagrant, feral
Little Egret *Egretta garzetta*	Spreading north, now coast France	Middle ages-?	Breeding from 1995
Great Egret *Egretta alba*	Central Europe, now Netherlands, France	?	Vagrant
Grey Heron *Ardea cinerea*	Adjacent coasts Norway to France	Common	Common
Purple Heron *Ardea purpurea*	Netherlands, South France	Possibly to XVII century?	Vagrant

nobleman was expected to be able to tell the two apart, and secondly, that it was already recognised that they arrived with south and not with north winds. The climate was getting colder (Reid Henry & Harrison 1988: 17), the main drainage of the fens was begun under the Stuarts, and by the time that it became possible to identify heron species, some came no more. Now that after a century of nature conservation they are reappearing it should not be forgotten that, like various wildfowl, they may have been here before.

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On types of trochilids in The Natural History Museum, Tring II. Re-evaluation of *Erythronota* (?) *elegans* Gould 1860: a presumed extinct species of the genus *Chlorostilbon*

by A.-A. Weller

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Among the hummingbird types once included in the heterogenous group of *Amazilia*, *Erythronota* (?) *elegans* (Gould 1860) has remained of questionable status since its discovery. Subsequently, Gould (1861, p. 162) mentioned its ‘‘distinctiveness from every other Hummingbird’’, mainly with regard to the contrasting, bifurcated tail (see morphological characters; Table 1). However, he also noted similarities in the colouration of crown, throat, and chest to *Chlorostilbon* species. Elliot (1878) and Salvin (1892) supposed *elegans* to be member of the genus *Amazilia*; to Salvin, it closely resembled *Amazilia erythronota* (=*A. tobaci erythronotos*). Without further examination, Ridgway (1911) accepted Salvin's opinion. Subsequently, Simon (1921), who greatly confused the taxonomy of many critical genera including *Amazilia* and *Chlorostilbon*, placed the bird in the group *Saucerottea* (=*Saucerottia*; merged with *Amazilia* by Peters 1945), with such species as *S. tobaci*, *S. viridigaster*, and *S. beryllina*. Peters (1945), although listing the type under *Amazilia*, was uncertain as to its status.

TABLE 1

Comparison of morphometric characters in *Erythronota* (*Chlorostilbon*) *elegans* and *Chlorostilbon ricordii*, showing range (n), mean, and standard deviation; analysis includes *C. ricordii* specimens from Cuba (*C. r. ricordii*) and Abaco (*C. r. aeneoviridis*). Note the congruent data for bill and wing length in *C. elegans* and *C. ricordii*, but differences for tail (less forked, shorter outer rectrices in *C. elegans*), m, male; f, female

	Biometric data			
Taxon	Bill (mm)	Wing (mm)	Rectrix # 1 (mm)	Rectrix # 5(mm)
E. (*C.*) *elegans* Gould, 1860	m: 18.8	52.5	25.5	36.5
C. r. ricordii Gervais, 1835	m: 17.0–19.6 (18)	49.3–54.5 (18)	20.1–22.9 (19)	41.2–46.9 (17)
	18.02 ± 0.64	52.69 ± 1.38	21.69 ± 0.84	44.10 ± 1.75
	f: 18.3–19.7 (7)	50.2–52.7 (9)	21.9–23.7 (8)	38.7–41.8 (9)
	18.94 ± 0.54	51.50 ± 0.97	22.72 ± 0.71	40.26 ± 1.21
C. r. aeneoviridis Palmer & Riley, 1902	m: 18.0, 18.2	52.0–53.6 (4)	22.9, 24.6	40.6, 40.9
		52.95 ± 0.75		
	f: 18.9–19.2 (3)	50.2–51.8 (3)	24.3–26.7	38.3, 41.0
	19.03 ± 0.15	51.10 ± 0.82	25.43 ± 1.21	

Recently, Walters (1980) and Wolters (1982) suggested possible species status as *Amazilia elegans*, whereas Sibley & Monroe (1990) completely ignored the specimen.

Due to these historic uncertainties, in the course of biogeographic and taxonomic studies of all *Amazilia* species I examined the type to re-evaluate its systematic position. Morphological evidence from this suggests that *E. elegans* represents an extinct member of the genus *Chlorostilbon.*

Material and methods

Morphological characters and morphometric data of the *Erythronota* (?) *elegans* type, BMNH 188.7.25.140 (locality and sex unknown), were directly compared with phenotypic characters of other trochilid genera in The Natural History Museum (BMNH) bird collection, especially species of *Amazilia* and *Chlorostilbon* (including types; see Warren 1966). Photographs of the type enabled comparison with specimen series abroad. Analysis of morphometric characters comprised measurements of the bill (proximal end of nasal operculum to tip), wings, and tail (rectrices 1, 5). As colours in *Amazilia* and *Chlorostilbon* species (subfamily: Trochilinae) are mainly iridescent, general descriptions of plumage patterns were made from subjective impressions but with reference to the type or selected individuals; other colours mentioned in the text refer to Smithe (1975).

Results and discussion

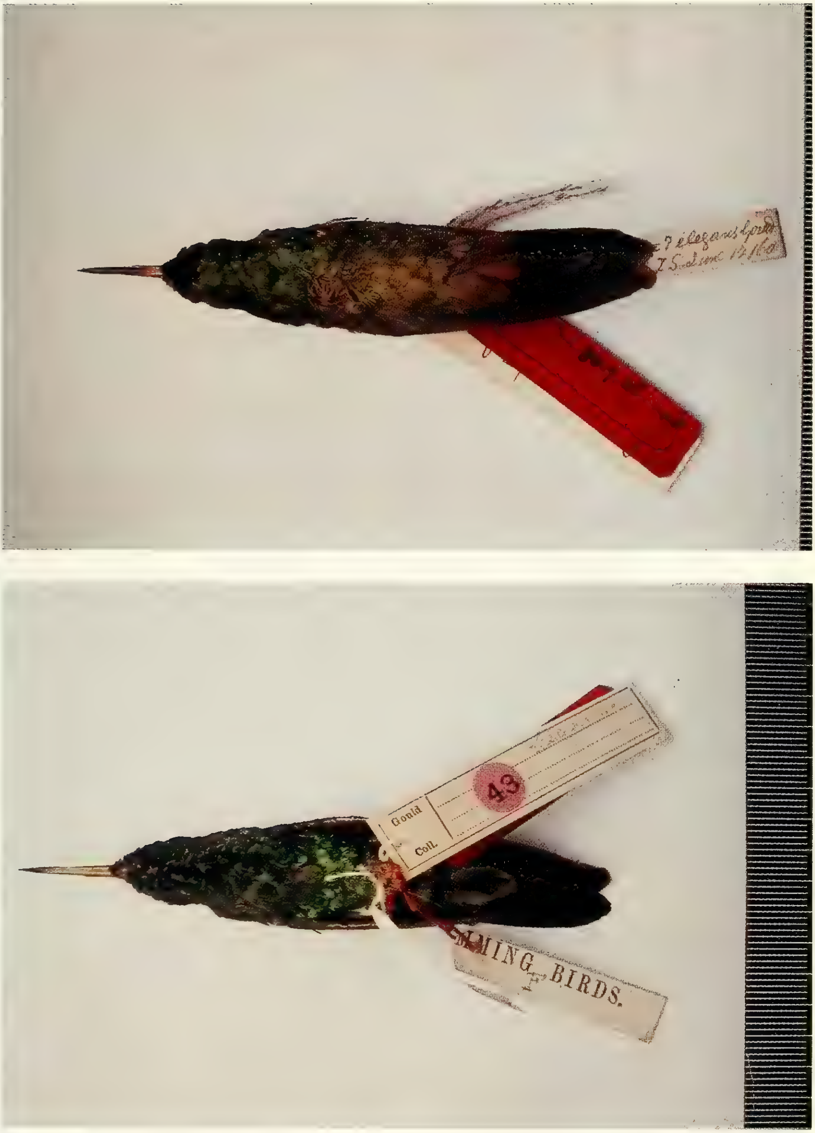
Morphological characters

The *E. elegans* specimen (Plate 3) has an entirely dark golden-green body plumage with brighter reflections on the rump. The uppertail coverts are copperish, becoming dark purple towards the tail and in the rectrices (tips dark bronze), the latter not being narrowed. As a characteristic feature, the tail is relatively strongly forked (11.0 mm; Table 1). The golden to bronze-green centres of the undertail coverts are edged whitish to pale cream coloured (Smithe, Colour 54). The bill is straight and medium-sized (19.0 mm), with the upper mandible blackish except for the basal third that appears pale horn coloured (in life possibly reddish), as is the whole lower mandible.

With regard to significant plumage and morphometric features, especially of bill and rectrices, the examination yielded no proof that the specimen is either an immature or moulting individual. No other trochilid genus except for *Chlorostilbon* and several species of *Amazilia* (subgenus *Saucerottia*) shows such a character combination, including bill morphology (Table 1). Nevertheless, the possibility that *E. elegans* might be a hybrid must be considered.

Intergeneric hybrid origin of E. elegans?

As for all possible hybrids, the evaluation of parental origin has to be judged geographically and morphologically. For the reasons given above, I only considered taxa of *Chlorostilbon* and *Amazilia* to be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43
MMING BIRDS.

Plate 3. Type specimen of *Erythronota* (*Chlorostilbon*) *elegans* Gould, BMNH 1888.7.25.140, dorsal view (A) and ventral view (B; scale on the right: mm units). Note the relatively dark (purple), forked tail (A), and the colouration pattern in the undertail coverts (B).

possible parental species of *E. elegans*. First, I looked for features not clearly derived from one of these genera. Interestingly, only one main diagnostic character could be judged intermediate between *Chlorostilbon* and *Amazilia*, the depth of tail bifurcation. Only a few *Amazilia* taxa of the present subgenus *Saucerottia* show a bifurcated tail that coincides with the morphology described for *E. elegans*, i.e. *A. s. saucerrottei* (max. 7.0 mm), subspecies of *A. tobaci* (max. 7.0–9.5 mm), and *A. virdidigaster* (max. 6.5 mm; all measurements for males, not listed separately). Yet the length of the outer rectrices of these taxa is reduced compared with the *E. elegans* type, in general reaching barely 31 mm (up to 34 mm in males of some *A. tobaci* ssp.). Furthermore, only three present *Chlorostilbon* species (all maximum values, for males: *C. aureoventris*—35 mm; *C. swainsonii*—50 mm; *C. ricordii*—46.5 mm, see Table 1) possess considerably longer outer rectrices than these *Amazilia* species, thus potentially qualifying as one parental species of *E. elegans*. Second, I looked for regions where parental species that could produce an appropriate hybrid occur sympatrically. However, there is no overlap at all between any of the above mentioned *Chlorostilbon* species with the relevant taxa of *Amazilia*. *C. aureoventris*, the only member of the genus inhabiting the mainland of South America, occurs farther south (Bolivia to Brazil, Argentina) than the northwestern distributed *A. s. saucerrottei* (Colombia), *A. viridigaster* (Colombia, Venezuela), and *A. tobaci* (Venezuela, Trinidad, Tobago). The remaining *Chlorostilbon* taxa are presently endemic to Caribbean islands (*C. ricordii*: chiefly Cuba, Bahamas; *C. swainsonii*: Hispaniola), with the exception of *C. bracei* [formerly New Providence Island, now believed to be extinct (Graves & Olson 1987)].

Based on these distributional and phenotypic findings, an intergeneric hybrid origin for *E. elegans* should be rejected. It is more probable that *E. elegans* represents a unique specimen of a so far unrecognized species. In view of all plumage characters, the type is more closely related to *Chlorostilbon* than to *Amazilia* or any other trochilid genus. As I will demonstrate below, morphology and morphometry indicate a close relationship to the *C. ricordii-bracei* group.

Intrageneric classification

Within the presumed genus *Chlorostilbon*, I reviewed colour patterns and mensural data of all generic members. *Chlorostilbon* is considered to comprise 11 (Bündgen, pers. comm.) to 13 species (Sibley & Monroe 1990), with the overwhelming majority inhabiting the northern parts of South America (8) and Caribbean islands (4). Only one species, *C. mellisugus*, reaches Central America (ssp. *assimilis*, *canivetii*, *forficatus*, *salvini*; ssp. *auriceps* up to 17°N, Bündgen, pers. comm.).

With regard to length and colouration of the tail in *E. elegans*, three criteria are important to narrow the pool of potential parental species: 1. species with conspicuously elongated outer tail feathers; 2. species with a contrasting pattern on the back and tail; 3. species with contrasting, whitish bordered undertail coverts. Species not exhibiting this combination of characters were excluded from further analysis of their possible relation to *E. elegans*. As sexes in *Chlorostilbon* are highly dichromatic, the colouration of the type is clearly that of a male. Thus, the following descriptions and comparisons refer to males.

Three species that lack all relevant characters are *C. alice*, *C. poortmani*, and *C. stenurus*, which have entirely green tail feathers and undertail coverts and relatively short outer rectrices. By contrast, *C. russatus* has brighter, golden copper tail feathers. The Caribbean taxon *C. mellisugus canivetii* is characterized by a longer but dull bronze-green tail. In all other South American taxa and in *C. maugaeus* (Puerto Rico), the underparts and undertail coverts are greenish but contrast with the dark blue to bluish-black tail. Moreover, in several taxa other apomorphic characters can be observed that do not fit the description of *elegans*. For example, *C. aureoventris* shows a golden to bronze-coloured belly and a shining turquoise throat; the latter feature is also exhibited by *C. prasinus* and *C. maugaeus*. In *C. stenura*, the outer rectrices are conspicuously narrowed.

The results of this analysis leave only two geographically isolated species remaining, that occur on different islands of the Caribbean Sea. One of them, *C. bracei* (Lawrence, 1877), was described from a single specimen from New Providence Island, Bahamas, and seems likely to have become extinct at the end of the last century (Graves & Olson 1987). Compared with *E. elegans*, the *C. bracei* holotype (male) can be differentiated in plumage colouration by, e.g., the entirely dark lower mandible, the reddish-bronze back, the bronze-green breast, abdomen, and tail, and greyish-whitish undertail coverts.

Of all members of the genus, *C. ricordii* clearly shares the most similarities with *E. elegans*. This hummingbird is restricted to Cuba, the Isle of Pines, and some northern Bahamas (Peters 1945, Bond 1947) where it is a common resident (Bond 1979, Raffaele *et al.* 1998). The recognition of geographic variation in *C. ricordii* led to the distinction of further races such as *C. r. aeneoviridis* (Palmer & Riley 1902), a taxon recently placed in synonymy with nominate *C. ricordii* (Graves & Olson 1987). While comparing *E. elegans* with the series of *C. ricordii* in The Natural History Museum, I found evidence that the type more closely resembles the *aeneoviridis* form, although the sample size was small (*C. r. aeneoviridis*: n=7, Abajo Island; *C. r. ricordii*: n=13, Cuba). *C. r. aeneoviridis* looks more golden green on the upper surface than the nominate form, a character also pronounced in the *elegans* type.

However, such resemblance is more than offset by striking differences. With respect to *C. ricordii*, *E. elegans* has more contrasting copper to purplish uppertail coverts and a dark purplish tail. In *C. ricordii*, these plumage parts and the innermost rectrices are more golden-bronze to copperish, whereas the outer rectrices are mainly blackish-green, rarely with a purplish tinge. Obvious contrasts are also found in the undertail coverts. In this character, *elegans* exhibits golden to bronze-green centres, more narrowly edged with white, whereas *C. ricordii* possesses broader white borders and dark brownish centres, sometimes with green basally. *E. elegans* and some specimens of *C. ricordii* do not show the tiny post-ocular patch typical for the genus (due to preparation) which can be observed in other *C. ricordii* specimens (diameter: 1.0–1.5 mm).

Considering the morphometric data, the values for bill and wing length of the *E. elegans* type fall within the range of *C. ricordii* (Table 1). However, there are significant differences concerning tail length and depth of bifurcation, as *E. elegans* has less elongated outer rectrices but slightly larger median rectrices than *C. r. ricordii*. Interestingly, the measurements indicate also transitions between *C. r. ricordii* and *C. r. aeneoviridis*. Unfortunately, some *aeneoviridis* specimens lack the rectrices, thus leaving too few specimens for statistical comparison (no data given by Graves & Olson 1987). I suggest that without examination of additional skin material the separate status of these taxa remains unclear.

As the Caribbean *Chlorostilbon* species occur on different islands, there is no reason to suppose *elegans* to be an intrageneric hybrid, a conclusion supported by its phenotypic appearance and non-intermediate size. Therefore, *E. elegans* should be regarded as a valid but probably extinct taxon within the genus *Chlorostilbon*, as no further museum specimens or records exist. I speculate that it was formerly distributed on one or several islands of the Caribbean, forming a superspecies with *C. bracei* and *C. ricordii*. Due to the apparent interspecific exclusion of *Chlorostilbon* species from particular islands, it can be supposed that *C. elegans* once occurred on an island (or archipelago) where no other congenerics have been found, e.g., on Jamaica or in the northeastern Caribbean (Bahamas). Biogeographically, immigration over the Central American land-bridge has been proposed for the Caribbean species group of *Chlorostilbon* (Schuchmann 1980).

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Recent records of the Sickle-winged Nightjar *Eleothreptus anomalus* in south-east Brazil

by Guy M. Kirwan, Paulo Martuscelli, Luís Fábio Silveira & Robert S. R. Williams

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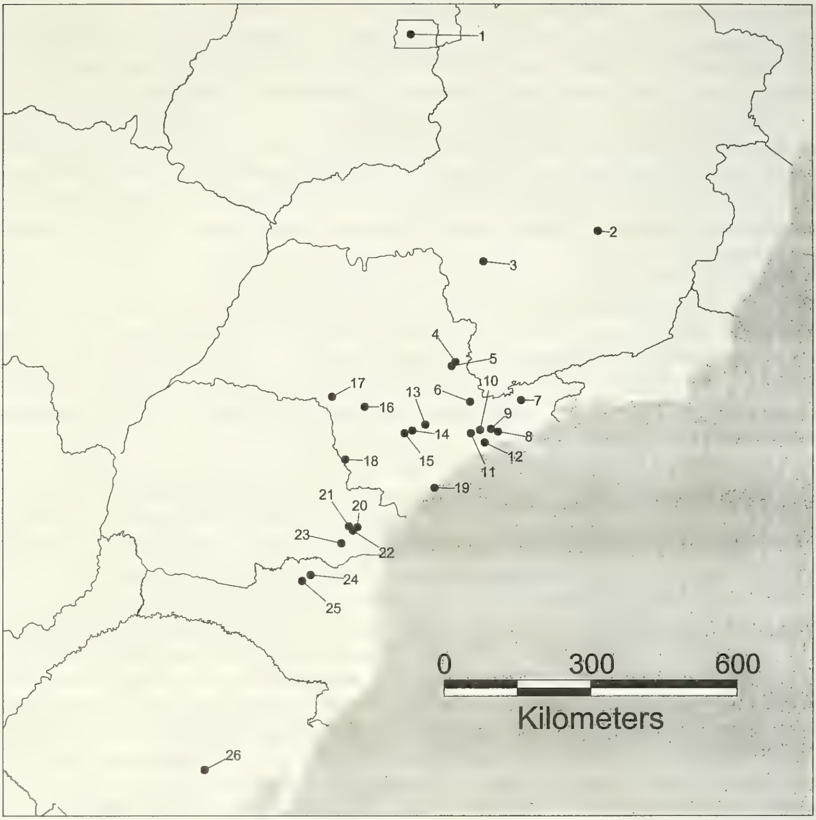
In Brazil, the endangered Sickle-winged Nightjar *Eleothreptus anomalus* is known from 19 traced localities: in Distrito Federal, Minas Gerais and from São Paulo south to central Rio Grande do Sul (Collar *et al.* 1992, Sick 1993). There have been just five records since 1971, the most recent being one found dead in Paraná in 1994 (Bornschein *et al.* 1996), although Bornschein *et al.* (1998) mention that they recorded three birds in a humid field by the rio Iraí, near Curitiba, Paraná, on

20 September 1991. Here, details of ten new records, four from São Paulo and four (all from one site) in Minas Gerais, the latter the first state records since 1847 (Collar *et al.* 1992), are presented. Details of two specimen records, previously unreported in the literature, are also presented. Although all of the records here, with the exception of the two most recent (1998) occurrences in Minas Gerais, were made available to Cleere (1998) we consider them worthy of separate publication and discussion here, as they suggest that the species may be found more readily in south-east Brazil than previously considered.

PM recorded three occurrences in São Paulo state as follows: two well-separated individuals in "campo cerrado", near a marsh at Santa Cruz do Rio Pardo (350 m, 22°53'S, 49°37'W) on 15 July 1995; five well-separated individuals in a humid field at Biritiba-Mirim (900 m, 23°34'S, 46°02'W) on 23 April 1998; and one bird in pasture near a swamp with *Typha* at Tremembé (650 m, 22°57'S, 45°32'W), date not recorded.

At dusk on 4 February 1997, GMK and RSRW, together with David D. Beadle and Rod McCann, found two Sickle-winged Nightjars (possibly a pair) on the dirt road just north of Sete Barras (24°40'S, 47°72'W) and south of Carlos Botelho State Park, São Paulo. The birds were observed with binoculars in car headlights, and showed many of the characteristics described by Pearman & Abadie (1995). Their tiny size and short tail were immediately apparent (although there were no other species available for direct comparison), as was their unusual flight action, being very fluttery and comparatively buoyant. One bird possessed a buffy nuchal collar and pale bases to the outermost, otherwise blackish, primaries. Four other small nightjars in the same area were seen too briefly to facilitate identification. These appear to be only the 4–6th multiple sight records (for a further such record, see below), following those described by Miatello *et al.* (1991), Straneck & Viñas (1994) and Pearman & Abadie (1995) in Entre Ríos, Córdoba and Santiago del Estero, Argentina, and the four São Paulo records are the 19th–22nd state occurrences (from 16 localities).

LFS recorded a female at Serra da Canastra National Park (20°14'S, 46°21'W), Minas Gerais on 22 June 1996 at 1945 h. The bird was photographed on the ground, on the principal (dirt) road through the park. It flew short distances to catch insects, before returning to the road after each flycatching sally. It was in a grassland formation, far from any water course. Another, or perhaps the same bird, was seen in the same place on 22 August 1997. Together with Andrés Bosso and Edson Endrigo, LFS saw a male in a grass field far from any watercourse or marshy areas, at Serra da Canastra on 20 and 22 August 1998, while Heinz Remold and Edwin O. Willis recorded three birds, also in the same dry area of the national park, on 7–8 November 1998. LFS *et al.* heard a female utter a "simple tik" note in flight, apparently different to the "harsh, nasal *gzee gzee* mentioned by Straneck & Viñas (1994) and Cleere (1998). HR *in litt.* (1998) records that the three observed by himself and EOW made "some chirping cricket-like sounds". These are the 2–5th records in Minas Gerais; the only



Localities in Brazil for which records of Sickle-winged Nightjar *Eleothreptus anomalus* are available. 1. Brasília National Park, DF. 2. Lagoa Santa, MG. 3. Serra da Canastra National Park, MG. 4. Orissanga, SP. 5. Rio da Pedras, SP. 6. Tremembé, SP. 7. Mato Dentro, SP. 8. Moji das Cruzes, SP. 9. Goyao, SP. 10. Ipiranga, SP. 11. Biritiba-Mairim, SP. 12. Paranapiacaba, SP. 13. Ipanema, SP. 14. Alambari, SP. 15. Itapetininga, SP. 16. Sete Barras, SP. 17. Fazenda Pedras, SP. 18. Itarare, SP. 19. Santa Cruz do Rio Pardo, SP. 20. Curitiba, PR. 21. Cambuí, PR. 22. Piraquara, PR. 23. Fazenda Santa Rita, PR. 24. Quatro Barras, SC. 25. Rio Novo, SC. 26. Pântano Grande, RGS. Abbreviations: DF=Distrito Federal; MG=Minas Gerais; SP=São Paulo; PR=Paraná; SC=Santa Catarina; RGS=Rio Grande do Sul. Localities 1–2, 4–5, 7–10, 12–15, 17–18, 20–22, and 26 taken from Collar *et al.* (1992); 3, 6, 11, 16 and 19 from this study; 23 from Bornschein *et al.* (1996); and 24–25 from Nigel Cleere *in litt.* (1997). The record, made by Bornschein *et al.* (1998), from Paraná on 20 September 1991, is not mapped as coordinates are unavailable to us, but its inclusion would not alter the species' overall mapped distribution in south-east Brazil.

previous record was in 1847, when two females were collected at Lagoa Santa on 2 August (Collar *et al.* 1992).

These records partially support Pearman & Abadie's (1995) statements concerning the species' habitat preferences. Whereas previous authors (e.g. Olrog 1984, Sick 1993) had noted an association with marshes, it now appears that the species is more reliant on gallery forest, chaco-type woodland and transitional woodland; a significant number of Argentine records come from areas adjacent to rivers, but rarely lakes or standing-water bodies (Pearman & Abadie 1995). The habitat near Sete Barras was grassland in close proximity to degraded dry woodland and a small river. The other records from new localities from São Paulo also showed some association with water, but those from Serra da Canastra apparently did not. Notably, the area in which the species was observed near Curitiba, by Bornschein *et al.* (1998), consists of humid, wet grassland along streams and rivers, interspersed with housing developments, grazing pasture and plantations (pers. obs.). In addition, there are two specimens, in the Museu Nacional de Rio de Janeiro, which have not previously been mentioned in the literature: singles collected at Rio Novo, Santa Catarina (c. 26°29′S, 50°16′W) on 3 June 1991 and at Quatro Barras, Santa Catarina (c. 25°22′S, 49°05′W) on 20 September 1991 (Nigel Cleere *in litt.* 1997). These are the first state records (do Rosário 1996).

These new sight, and previously unpublished recent specimen, records suggest that *Eleothreptus anomalus* may be somewhat less scarce, and at least as widespread, as formerly presumed in south-east Brazil (Collar *et al.* 1992, Cleere 1998). We do not suggest that its threatened status necessarily requires revision. Nonetheless, observers should clearly be aware of the possibility of finding this species in open, grassland habitats and are encouraged to search actively for it in appropriate areas of the country. The even rarer White-winged Nightjar *Caprimulgus candicans* (which may be congeneric with *Eleothreptus anomalus*, see Cleere 1998) has a broadly similar distribution. *C. candicans* has recently (1997) been rediscovered at Emas National Park, Goías, Brazil, having been unrecorded there since 1990 (Rodrigues *et al.* 1999), and significant numbers have recently been found at Reserva Natural del Bosque Mbaracayú, Paraguay (Clay *et al.* 1998). Given that this highly distinctive and attractive species had gone unrecorded for comparatively long periods, even at relatively well-watched localities such as Emas, it would certainly appear worthwhile to re-survey old specimen localities for the less strikingly-plumaged *Eleothreptus* as well, of course, as searching for new sites. From the conflicting evidence available, it appears that *E. anomalus* may occupy a relatively wide range of grassland habitats (see e.g. Cleere 1998), or that a currently intangible common factor links these different environments.

Acknowledgements

We wish to thank Juan Mazar Barnett and Nigel Cleere for information used in the preparation of this note and NC for his pertinent comments on an earlier draft, Heinz Remold for providing details of his and Edwin O. Willis' observations at Serra da Canastra National Park, David C. Oren for providing coordinates for the localities of those specimens in the Museu Nacional de Rio de Janeiro, Fernando Costa Straube for assistance with references, and David Butler for production of the map.

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A westward extension to the known breeding range of Sabine's Gull *Larus sabini* in Siberia

by J. L. Quinn & Y. Kokorev

Received 27 September 1998

Sabine's Gull *Larus sabini* breeds across the sub- and high-Arctic of North America and Asia but has a restricted distribution within this biome. Across the Asian continent, for example, it is thought to breed in just six discrete areas and is found along a very small proportion of the continental coastline. Apart from sporadic breeding on Spitsbergen (20°E), where birds may originate from Greenland (Isaaksen & Bakker 1995), the most westerly areas in which they have been found include the northern part of the Taymyr Peninsula (100°E), eastern Taymyr

(107°–115°E) and the Indigirka Delta (150°E) (Ilyichev & Zubakin 1988; Blomqvist & Erlander 1981).

Observations made in July 1995–1997 during expeditions to the Pyasina Delta (74°N, 86°E) in western Taymyr, northern Siberia, suggest the presence of a previously unrecorded small population of Sabine's Gulls, 600 km west of their current western limit. In 1995 a single pair was found nesting communally with one pair of Arctic Terns *Sterna hirundo* and eight pairs of Herring Gulls *Larus argentatus* (precise location undetermined). In 1996 three pairs were found nesting along with 13–15 pairs of Arctic Terns (73°42′N, 86°45′E) and in 1997 a further five pairs were found (Verkhniy Island, 73°47′N, 86°55′E). These colony sizes are similar to those found in eastern Siberia (Kondratiev & Kondratiev 1987). We did not search for nests because in all cases birds reacted to our presence by aggressively mobbing both ourselves and neighbouring gulls and terns, providing good evidence that they were defending active nests.

These records were made by chance and with little effort. Given that the delta is about 50 km long, up to 20 km wide in places and is dotted with several tens of islands, it is possible that the population here numbers tens of pairs, though is unlikely to be any larger. The islands on the outer parts of the delta have been visited frequently by others who have never recorded Sabine's Gulls (B. Ebbinge, pers. comm.). Furthermore, on the several journeys we made through the delta, only one adult Sabine's Gull was seen away from land, although this is perhaps not so surprising because they feed mainly inland during the breeding season (Cramp & Simmons 1977).

The habitat used by the nesting gulls was similar to that recorded in other parts of their range. All nested on low-lying, flat islands in the middle part of the delta. These islands were dominated by typical maritime saltmarsh vegetation (mosses and grasses) and were dotted by numerous small brackish pools which provide ideal feeding habitat for the gulls. The localised distribution of nesting Sabine's Gulls in Asia presumably reflects a limited amount of this habitat.

Whether these records represent an extension to the known, or an expansion of the actual, range is unclear. The fact that Russian biologists have visited the Pyasina Delta on many occasions supports the latter possibility (E. Lappo, *pers. comm.*). On the other hand, it is equally plausible that the species has not previously been recorded simply because the delta is so large. Although the numbers of pairs detected so far are small, their continuous presence over three seasons, and the likelihood that many more pairs are present on the delta, justifies updating the current breeding range of Sabine's Gull.

Acknowledgements

These observations were made during expeditions to study Red-breasted Geese *Branta ruficollis* and Peregrine Falcons *Falco peregrinus* in Taymyr, funded by the National Avian Research Centre, UAE, the European Union INTAS fund and the Peter Scott Trust for Education and Research in Conservation. We would like to thank Elena Lappo for encouraging us to publish this information, Mike G. Wilson for translating salient parts of numerous Russian articles, and Jeremy Lindsell and W. R. P. Bourne for their useful comments on the paper.

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BOOK RECEIVED

Pazzucconi, A. 1997. *Uova e Nidi degli Uccelli d'Italia*. Pp. 655, 95 coloured plates of eggs (photographs), Calderini, Bologna, Italy. Italian liras 85,000 (hbk). ISBN 88-8219-014-5.

In 1896 H. Seebohm wrote, in the introduction to his *A History of British Birds*, that oology may be described as the poetry of Ornithology. That is as true today as at Seebohm's time, even if many things have changed: large collections were assembled in the last century and in the first half of the current one and no need for extensive collecting is presently felt. But reference materials have proved so important in many fields of investigation that each nation should have a complete collection of the eggs of its birds scientifically collected and preserved. This is quite easy because most amateur oologists have demonstrated their willingness to pursue the highest scientific standards. This is certainly true of Aldo Pazzucconi, who has dedicated at least 50 years of his life to assemble, on behalf of the Museo Civico di Scienze Naturali di Milano and the Laboratorio di Zoologia Applicata alla Caccia (now Istituto Nazionale per la Fauna Selvatica), the most complete collection of the eggs of the birds nesting in Italy. Two pages are devoted to each of the 265 species dealt with: distribution, habitat requirements, location of the nest, the nest, the eggs, laying and incubation time and clutch size are described. A table gives egg dimensions and weight. The plates are truly wonderful, with up to 9 complete clutches and series of up to 20 representative eggs from different clutches to illustrate the variability in the same species. For Cuckoo enthusiasts there are 2 plates with 36 pairs of eggs documenting 21 different host species. The publisher must be complimented on the quality of the printing; the numberless colour nuances, the differences of shine and of grain of the shells are wonderfully presented. Since 1976, when the last volume of the work by Makatasch was published, no one has confronted himself with this particular aspect of ornithology and we are proud that this new, wonderful work comes from Italy. The pity is that it is written in the Italian language, but the plates and the tables are self explanatory and there are indices to the Latin, Italian, German, English and French names of the birds. This work should be on the bookshelves of all ornithologists, professionals as well as amateurs.

Guiseppe Micali

NOTICE TO CONTRIBUTORS

Papers are invited from Club Members or non-members, especially on taxonomic and distributional topics; descriptions of new species are especially welcome and may be accompanied by colour photographs. **Two copies** of manuscripts, typed on one side of the paper, **double spaced and with wide margins**, should be sent to the Editor, Prof. Chris Feare, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK. All contributions should follow the style of papers in this issue of the *Bulletin*. Where appropriate, authors are invited to submit half-tone photographs to illustrate their papers.

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The 1999 List of Members, and addresses was again not published with the *Bulletin* but copies are available, on application (with a remittance of **£2.00** to cover costs of production and postage), to the Hon. Secretary. Please advise the Hon. Secretary, without delay, of any address changes, or corrections, for despatch of the *Bulletin.*

E-mail addresses. In response to numerous requests, it is planned to include these details in **The 2000 List of Members.** Members wishing these to be added to their mailing address please inform the Hon. Secretary, by this means, (see below) as soon as possible.

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Edited by
Professor CHRIS FEARE

Volume 119 No. 4 December 1999

MEETINGS are held in the **Sherfield Building of Imperial College,** South Kensington, London, SW7. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from **6.15 pm,** and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about **8.00 pm.**

FORTHCOMING MEETINGS

18 January 2000.—Jon Hornbuckle on *"Birds of Andean Peru".* Jon took early retirement in 1993, after a career in scientific and technical management with the steel industry, to pursue his wildlife interests full-time. He has extensive experience as an ornithological fieldworker and ringer, in many parts of the world, but especially South America where he has led surveys of threatened cloud forests in NW Ecuador and NE Peru. He has lectured extensively on these experiences, and is an author of a considerable number of papers and reports, including one (with R. C. Brace) published in *Bull. B.O.C.* 118: 36–47.

Applications to the Hon. Secretary by ***4 January*** *please.*

29 February.—James Jobling on "*Pallas's Gull and the Inornate Warbler*". James has been a member of the BOU for over 30 years, his special interests including nomenclature and the etymology of bird-names, geographical distribution, and field identification. He is the author of *A Dictionary of Scientific Bird Names* (OUP 1991), and contributes the etymological mastheads to the ongoing volumes of *Handbook of Australian New Zealand and Antarctic Birds.* He is currently researching material for *An Encyclopedia of English and Scientific Bird Names.*

Applications to the Hon. Secretary by ***15 February*** *please.*

4 April.—Errol Fuller on "*Extinct Birds*". Errol is internationally known as a painter of sporting subjects, with a special interest in the curiosities of natural history, especially in birds. He has published and illustrated several books, including *Extinct Birds* (1987) and *The Lost Birds of Paradise* (1995). His obsession with vanished species has led him to travel the world, researching the records and last remains of the Great Auk, which resulted in the recent publication (November 1999) of a popular edition of his most recent major work, *The Great Auk.*

Applications to the Hon. Secretary by ***21 March*** *please.*

Tel/FAX: 01730 825280 for late bookings and cancellations.

Advance notice of meeting dates for the year 2000. Arrangements have been made for a further five Tuesdays: **2 May** (AGM and social evening—with informal "mini-talks"), **4 July**, **3 October**, **31 October** and **28 November**. Details of speakers will be published, when finalised.

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club on these dates, giving as much advance notice as possible—please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants GU31 5PA, UK. Tel/FAX: 01730 825280 (or **Email: mbcasement@aol.com**).

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 119 No. 4 Published 10 December 1999

CLUB NOTES

The eight hundred and eighty sixth meeting of the Club was held on Tuesday 6 July 1999, at 6.15 pm. 21 Members and 12 guests attended.

Members present were: The Rev. T. W. Gladwin (*Chairman*), Miss H. Baker, Mrs D. M. Bradley, D. R. Calder, Cdr M. B. Casement RN, Professor R. J. Chandler, S. J. Farnsworth, D. J. Fisher, R. M. Gauntlett, A. Gibbs, D. Griffin, J. A. Jobling, Dr C. F. Mann, D. B. Massie, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, P. J. Oliver, P. J. Sellar, and N. H. F. Stone.

Guests attending were: J. Ekstrom (*Speaker*), M. Bradley, Mrs J. B. Calder, Mrs C. R. Casement, Mr R. Ekstrom, Mrs M-L. Ekstrom, Miss K. Ekstrom, Mrs M. H. Gauntlett, Mrs J. M. Gladwin, Mrs S. Griffin, Mrs M. Montier, and P. J. Moore.

After dinner, Jonathan Ekstrom gave a fascinating talk, illustrated with a wide range of spectacular colour slides on the *Conservation of birds and reptiles in New Caledonia*. The following is a brief synopsis:

New Caledonia consists of a long, thin and archaic island (a fragment of the former continent of Gondwana) known as Grande Terre, and several much younger coral islands just off its east coast. Her isolation, geology, and no doubt some serendipity, has left a biological legacy of diversity and endemism almost unparalleled in the south Pacific. Reports of such biodiversity and the threats it faced were enough to tempt a research and conservation expedition from Cambridge in 1998. "Project Diadema" involved students, conservationists and foresters from the Universities of Cambridge, Paris and New Caledonia, who worked together to complete biodiversity surveys for key species of threatened and endemic birds and reptiles known from the main island of Grande Terre.

The archipelago is not much bigger than Wales and yet sports over 3,000 species of native flowering plants, about 80% of which are endemic to the islands. 15 endemic palm genera and the world's only parasitic conifer are just some of the botanical curiosities the island has on offer. The diversity in plant life is a product of both the isolation but also the fantastic range of habitats across the New Caledonian mainland. Lowland and montane rainforests, sclerophyll forests, savanna woodlands, mangroves and maquis scrub are all native to New Caledonia. These habitats harbour an extraordinary collection of animals. In invertebrate groups, endemism often approaches 100%, for example amongst the land molluscs and the Cerambycid beetles. These invertebrates are food for the remarkable lizard fauna of skinks and geckos, of which about 50 species are endemic. The geckos include the genus *Rhacodactylus*, which holds the largest species in the world, *Rhacodactylus leachianus*. This gecko is just big enough to predate the smallest birds such as the small Silver-eared Honeyeater *Lichmera incana*, just one of some 22 species of bird endemic to the island. The birds are a curious and somewhat depauperate mix of Oriental, Australasian and Pacific taxa, but include some real curiosities, the largest of which is surely the Kagu *Rhynochetos jubatus*.

Project Diadema worked closely with government institutions, organisations and local tribes in the surveys of the island's forests. Research on the reptile fauna is still at a taxonomic and distributional level; the project concentrated on producing site inventories amongst the gecko and skink groups. In addition, one new species of gecko was discovered during the course of fieldwork on Mont Ignambi, and has recently been described and named as *Bavayia madjo*. Amongst the birds, most of the endemic species were confirmed to be well distributed over most of the island. Exceptions to this included Horned Parakeet *Eunymphicus cornutus* and Crow Honeyeater *Gymnomyza aubryana* which appeared to be more restricted to the ultrabasic forests of the south of the island. In addition, several populations of Kagu appear to be very small or locally extinct and this bird remains the highest conservation priority in New Caledonia by virtue of its rarity, fragmented populations, taxonomic uniqueness and susceptibility to predation by introduced dogs and rats.

One of the great inspirations for the research was the fact that there were four bird taxa endemic to New Caledonia which had not been seen in over a century: the New Caledonian Rail *Gallirallus lafresnayanus*, Diademed Lorikeet *Charmosyna diadema*, New Caledonian White-throated Nightjar *Eurostopodus mystacalis exul*, and the New Caledonian Owlet-nightjar *Aegotheles savesi*. *A. savesi*, known from just one specimen collected from the upstairs bedroom of a house in 1880, was re-discovered by Project Diadema. On 5 November 1998, two of the project members saw a large, dark Owlet-nightjar foraging in and out of the forest canopy beside a dirt road. A paper on this rediscovery has been prepared.

Further information on the project's findings can be found in the full report, due to be published in 1999 by CSB Conservation Publications.

The eight hundred and eighty seventh meeting of the Club was held on Tuesday 7 September 1999, at 6.15 pm. 29 Members and 10 guests attended.

Members present were: Dr R. P. Ryŷs-Jones (*Chairman*), Miss H. Baker, Captain Sir Thomas Barlow Bt, dsc, rn, P. J. Belman, Mrs D. M. Bradley, D. R. Calder, Cdr M. B. Casement rn, Professor R. J. Chandler, Dr N. J. Collar, R. C. Dickey, S. J. Farnsworth, R. M. Gauntlett, A. Gibbs, D. Griffin, C. A. R. Helm, J. P. Hume, G. P. Jackson, J. A. Jobling, R. H. Kettle, D. J. Montier, Dr M. Carswell, R. G. Morgan, A. J. Randall mp (*Speaker*), Dr D. E. Pomeroy, R. E. Scott, Dr R. C. Self, Dr C. G. Stack, F. D. Steinheimer, and C. W. R. Storey.

Guests attending were: M. Bradley, Mrs C. R. Casement, Ms A. Cameron, Dr J. Cuthbert, J. Dickey, A. D. Forbes-Watson, Mrs M. H. Gauntlett, Mrs B. Hammond-Gibbs, Ms K. Hoff and Mrs M. Montier.

After dinner, Alex Randall entertained the meeting with a lively talk *Conservation matters, as viewed from Westminster*. He gave a fascinating insight of his experiences as a newly-elected MP, and the practical difficulties in influencing constructive debate on his own areas of special interest—on general conservation matters, and ornithology in particular. His talk provoked a large number of questions and further debate. The following is a brief summary:

The initial feeling of a newly elected MP, apart from the obvious change in one's daily routine, mixes the excitement of thinking that you might be able to make significant input into debates, with a slight bewilderment with the plethora of different parliamentary procedures. After a while the mist begins to clear and one can begin to see daylight. Oral and written questions, Second Readings, Third Readings, committee and report stages of Bills, as well as Ten Minute Rule and Private Member Bills all offer opportunities to raise issues. There is also the opportunity of tabling Early Day Motions, or at least appending one's name to one. These can be likened to political graffiti where in theory motions are put forward for possible debate. In reality they never reach the floor of the house, but do allow good opportunities for getting a message into the public eye. They are often reported as an MP demanding a debate on the relevant subject. Sadly, the system is somewhat abused at the moment, for example one recent EDM complained about a penalty decision in a FA cup tie.

Similarly, Ten Minute Rule bills give ample opportunity for media opportunities but, as with all attempts at news management, events often overtake the best laid plans.

There is a very great frustration for backbench MPs as it is extremely difficult to get even the tiniest amendment in a Bill accepted by the Government. An example was given where the one word 'biodiversity' was attempted to be added to a clause in the recent Greater London Authority Bill during its passage through the Commons. Although an assurance to include it was given at the Committee Stage by the relevant Minister, it was said to be too difficult to draft by the time it left for the Lords.

Although sometimes the public exposure of an issue is beneficial, very often a more subtle approach, by written question, letter or even a conversation in the Tea or Smoking Rooms might prove more effective in getting the required action. The assistance of voluntary organisations such as the RSPB and the Wildlife Trusts can be invaluable, although there is always a risk of the parliamentary officers being more interested in politics than the subject of wildlife, and having slightly conflicting agendas.

Many MPs profess an interest in wildlife but are not necessarily prepared to pursue the issues. The problem may well be because, generally speaking, the subject is non party-political and is therefore not seen as a way of advancement for those with ambition. Wildlife conservation matters are gradually becoming considered as serious subjects for parliamentary debate and hopefully will not be seen as something only pursued by a few eccentric devotees.

Erratum

Giuseppe Micali's review of the book by Pazzuconi (*Bull. Br. Orn. Cl.* 119:208) contains the following errors: the sentence concerning cuckoos should state "2½ plates with 45 pairs of eggs documenting 27 species", and Micali's Christian name should be spelt "Giuseppe". He informed the editor of these errors in the proof, but the information did not arrive until after the text had gone to press.

The valid name for Blue-winged Parrotlet and designation of the lectotype of *Psittaculus xanthopterygius* Spix, 1824

by Bret M. Whitney & José Fernando Pacheco

Received 15 January 1998

Johann Baptist Ritter von Spix (1824) described two small parrots he collected in Minas Gerais, Brazil, under the name *Psittaculus xanthopterygius*. Salvadori (1891) noted that the name included two different kinds of parrots. In his revision of Spix's type specimens of birds, Hellmayr (1906; this work was dated 1905, but published in 1906) recognized that these parrots represented two species pertaining to different genera. One of them proved to be an immature male *Brotogeris chiriri* (Vieillot 1817; Yellow-chevroned Parakeet), the other he identified as *Psittacula* (=*Forpus*) *passerina vivida* Ridgway 1888. Spix did not designate either of them the holotype, although he undoubtedly chose the name *xanthopterygius* in reference to the yellow on the wing of the larger specimen, sexed as a male. A question mark beside the "female" symbol for the smaller of the two on the colour plate (plate 34, fig. 2) accompanying Spix's description may indicate that he, or the artist (or another party), had some doubt about the sex or identity of the second specimen, which lacked yellow on the wing. (Regardless, this question mark has no nomenclatural significance). Hellmayr (1906) concluded that the specific epithet *xanthopterygius* was a composite applying to two previously named taxa, and placed it in the synonymy of both, indicating his intent clearly in separate species accounts (p. 580 for *Brotogeris chiriri*, p. 587 for *Psittacula passerina vivida*). Thus, Hellmayr did not designate a type specimen (to the contrary, he considered the name a synonym two times over), and his treatment did nothing to restrict the availability of the name *xanthopterygius*. This species-level arrangement was followed by Peters (1937) and Pinto (1938).

Gyldenstolpe (1945, pp. 52–55) presented a partial revision of the genus *Forpus*, separating two major, narrowly parapatric groups based primarily on colouration of the rump. The name *passerinus* (Green-rumped Parrotlet) applied to green-rumped birds. He resurrected *xanthopterygius* (Blue-winged Parrotlet) as the oldest name available for his blue-rumped group. Pinto (1945) accepted Gyldenstolpe's arrangement, but proposed that the name *xanthopterygius* was inappropriate because it was a composite, and referred to the blue-rumped species-group by the next-oldest name, *crassirostris* (Taczanowski 1883). His reasoning is clear from the following sentence (pp. 12–13): "Isso [the fact that *xanthopterygius* was a composite], a meu ver, reduz o nome do Spix a sinônimo do de Vieillot [*Psittacus chiriri*], impedindo o seu emprego ulterior em nomenclatura." ["This, in my view, reduces Spix's name to the synonymy of Vieillot's name, impeding its later use in nomenclature"]. This paper by Pinto has been generally overlooked, although it was cited and followed by him in his later *Novo Catálogo das Aves do Brasil* (Pinto 1978). Meyer de Schauensee (1966, 1970), Forshaw (1973, 1989), and Sibley and Monroe (1990, 1993) continued to follow Gyldenstolpe (1945), possibly unaware of Pinto's (1945, 1978) opinion. Willis and Oniki (1991) and Stotz *et al.* (1996) followed Pinto (1978) in adopting *crassirostris* as the name for Blue-winged Parrotlet (*tuim-de-asa-azul* in Portuguese). Collar (1997a) offered an explanation of adoption of the name *crassirostris* by Stotz *et al.* (1996; which authors indicated only that they had followed Pinto [1978]), asserting that "the proper name for Blue-winged Parrotlet must remain *Forpus crassirostris*." Most recently, Collar (1997b: 449) used the name *Forpus crassirostris* for Blue-winged Parrotlet.

The International Code of Zoological Nomenclature (ICZN; 1961, 1964, 1985) has as its primary objective the stabilization and regulation of zoological and paleontological nomenclature. Because application of the ICZN became mandatory only with the first edition, the treatments of Salvadori (1891), Hellmayr (1906), Peters (1937), Gyldenstolpe (1945), Pinto (1945), or other authors before 1985, may be viewed in the context of their respective times as arbitrarily acceptable. Problems of access to some literature may have contributed to the disparate application of the names *xanthopterygius* and *crassirostris* summarized above. However, stabilization of the name for Blue-winged Parrotlet is currently a matter of straightforward invocation of the ICZN (1985). Chapter IV (Criteria of availability), Article 17 (1) states, "The availability of a name is not affected even if it is found that the original description relates to more than one taxon . . ." One of Spix's two specimens is clearly a *Brotogeris chiriri*; the other, a *Forpus* parrotlet, as a syntype, retains the name *xanthopterygius*. Thus, Pinto's (1945, 1978) opinion, unfortunately followed by several recent authors, must be discarded.

Gyldenstolpe (1945) is seen to have been quite correct, under the Principle of Priority (Chapter VI, Article 23), in resurrecting *xanthopterygius* for his blue-rumped group, and not "in ignorance of Hellmayr's [1906] paper", as presumed by Collar (1997a). When he applied the name *xanthopterygius* in his revision, Gyldenstolpe (1945) referred clearly to the individual specimen on which the name was based: "The type of this form, which is kept in the Munich Museum, is stated by Hellmayr in his valuable revision of the types described by

Spix (p. 587, 1906) to correspond in size and colouration with numerous females from Bahia." Under Chapter XVI (Types in the species group), Article 74 (a) of the ICZN (1985), and in consideration of the foregoing discussion of the proper application of nomenclature, this unambiguous statement by Gyldenstolpe serves to designate Spix's specimen the lectotype of the species *Psittaculus xanthopterygius*. As this fact seems to have been lost in the recent nomenclatural confusion, however, we hereby formally designate Spix's (1824) specimen of *Psittaculus xanthopterygius* (clearly a *Forpus* parrotlet) in the Zoologische Staatssammlung München, the lectotype of that species, with the type locality "Minas Geraës" (=Minas Gerais). To minimize further ambiguity, this specimen (which has no formal museum catalogue number, but which is clearly labeled with reference to the original description by Spix [1824]; J. H. Reichholf, *in litt.* to BMW June 1999) should be labeled the lectotype of *Psittaculus xanthopterygius* Spix 1824 at this time. Finally, in accordance with Recommendation 74A (Agreement with previous restriction), use of the widely accepted name *xanthopterygius* for the Blue-winged Parrotlet group preserves stability of the nomenclature.

Acknowledgements

We are grateful to Professor Dr Josef H. Reichholf, head of the Department of Ornithology at the Zoologische Staatssammlung München, for sending us photocopies of the labels on Spix's original *Psittaculus xanthopterygius*, and for later clarifying that this specimen does not have a museum catalogue number. We thank Luis Fábio Silveira for photographing the appropriate pages and plates of Spix (1824) held at the Museu de Zoologia da Universidade de São Paulo. Thanks to Kenneth Parkes and an anonymous reviewer for comments on an earlier draft of this note.

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Type specimens of new forms of *Lonchura*

by Mary LeCroy

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Recently, a number of new taxa of *Lonchura* finches have been proposed (Restall, 1992, 1995, 1996), and a book has since appeared in which these names are used (Restall 1997). The types of some of these new forms are in the American Museum of Natural History (AMNH). Several problems have arisen in relation to these names and this note is an attempt to clarify certain nomenclatural points, in part relevant to future publication of a list of types in the AMNH.

Lonchura punctulata holmesi **Restall** (1995: 141). This taxon was previously validly described by Restall (1992: 115). Restall (1995: 141, 1997: 103) does not refer to the earlier description, which was apparently based on 29 living specimens, nine from "the country east of Pontianak" and "twenty shipped to Jakarta from Banjamarsin," all of which would be syntypes. Three specimens, apparently the only three preserved, have been deposited at the AMNH (Nos 831281, 831282, and 831283), and are said to be from Semitau. In compliance with the International Code of Zoological Nomenclature (ICZN) Article 74(a) (Ride, 1985: 153), I nominate specimen No. 831281 as the lectotype. The place of origin of the lectotype then becomes the type locality of the taxon (Article 74(a) (iii)), this being Semitau (0°30′N, 111°59′E), west Kalimantan, Indonesia. The other two extant specimens are paralectotypes, also said to have come from Semitau. Pontianak, referred to above, is at 0°05′S, 109°16′E, approximately 150 km southwest from Semitau. Bandjamarsin is a port on the south coast of Kalimantan at 3°22′S, 114°33′E, far distant from the other two localities. Further consideration of the status of *L. p. holmesi* will be made by Mees (ms) in a wider review of the various subspecies of *Lonchura punctulata*.

None of the specimens is sexed, and Restall (1995: 141) explicitly states that there is no sexual difference in colouration; therefore, his mention of sexual differences in size seems unsupported. If there are behavioural differences between the sexes, these should have been stated. Restall (1992: 116; 1997: 104) illustrates that his tail measurements, presumably from living birds, were made from the wingtip to tailtip. This is, of course, an unreliable skin measurement due to variations in the "make" of skins, and his measurements are not comparable to those of skins. He does not state how his other measurements were made.

Lonchura striata sumatrensis. As Snow (1997) pointed out, Chasen & Hoogerwerf (1941: 116) did not name this form, *contra* Restall (1995: 142). Chasen (1939: 183) first named it *Munia striata sumatrensis*. Upon discovering that the name was preoccupied by *Munia sumatrensis* of Bartlett (1888), he provided the new name *M. s. explita* (Chasen, 1940: 261). Chasen (1939: 183) designated as the holotype of *Munia striata sumatrensis* (and thus of *M. s. explita*) specimen No. 11249 in the Buitenzorg Museum (=Museum Zoologicum Bogoriense, Bogor, Indonesia), from Blang Kedjeren, Atjeh, 800 m, Sumatra (see Snow 1997: 4). This specimen is now in Leiden (Mees, 1986: 147).

Restall (1995: 142 *et seq*.) cites Paynter & Storer (1970) when referring to the treatment of *Lonchura* in the *Check-list of Birds of the World*, but as Snow (1997: 4) has noted, this is not the volume that contains the Estrildidae; the correct citation is Mayr *et al*. (1968).

Contra Restall (1995: 142), *Lonchura striata explita* is not listed in Mayr *et al*. (1968: 374) as a synonym of *L. s. subsquamicollis*. Rather, a footnote states that Delacour's (1947: 335) use of that name is a lapsus and a *nomen nudum*. The above discussion shows that Delacour's *use* of *explita* was correct, but he did not *propose* the name as Restall (1995: 142) states.

As the above discussion also shows, the name *sumatrensis* is not available for the Sumatra population of *L. striata*. Even if it were, one could not arbitrarily take a "good" specimen from Sumatra and declare it a type (=neotype), unless the material upon which Chasen based *sumatrensis* is shown to be lost, ICZN Article 75 (d) (3) (Ride, 1985: 159). This is not the case, therefore specimen No. ZRC.3.3500 in the National University of Singapore has no standing as a type.

Restall (1997: 82) uses the unavailable name *L. striata sumatrensis* Chasen without comment.

***Lonchura quinticolor sumbae* Restall** (1995: 143). Restall (1997: 104, 135) uses the name *sumbae* for races of two species of *Lonchura* (*L. punctulata* and *L. quinticolor*) without comment. According to ICZN

Article 57(b) (Ride, 1985: 145), Restall's name *L. quinticolor sumbae* is a primary homonym of *Lonchura punctulata sumbae* Mayr (1944: 169). If the central Lesser Sunda populations are distinct, a replacement name will be needed for them.

The type designated by Restall is in The Natural History Museum (formerly the British Museum (Natural History), BMNH). Robert Prŷs-Jones (*in litt.*) has informed me that the date of collection of this specimen is Sept. 1896, not 1898 as given by Restall (1995: 143).

***Lonchura monticola myolae* Restall** (1995: 145). One of the syntypes of *Lonchura monticola myolae* Restall, AMNH No. 721469 (not 421469), is from Mt. Knutsford (not Knotsford), in the Owen Stanley Mountains, south of Mt. Scratchley, Papua New Guinea. The other, AMNH No. 721471 (not 421471), is from Mt. Scratchley, the type locality of *Lonchura monticola*. The description of *Munia monticola* (DeVis 1897: 387) was based on two males, three females and an unsexed spirit specimen. They were collected at 3,750 m on Mt. Scratchley by A. Giulianetti, on a trek from the Mambare to the Vanapa rivers with Sir William MacGregor (not on Mt. "Edward Albert," [=Albert Edward] as stated by Restall). The skin syntypes are in the Queensland Museum in Brisbane, Nos QMO.19788–QMO.19792, 16 September–1 October 1896; the unsexed spirit specimen could not be found in April 1998 (H. Janetzki, *in litt.*). Sharpe (1898: 60) described *Munia nigritorquis* from Mt. Albert Edward; it is a synonym of *Lonchura monticola*, and the holotype is in the BMNH, No. 1898.5.31.15.

Contra Restall (1995: 145), I see no mention in Coates (1990: 346–347) of any noticeably richer colour in any population of this species. Coates (1990: 342, 347) refers to hybridization between this species and *L. spectabilis* at Guari, which Restall (1997: 173, 174) interprets as referring to a possibly undescribed population. Hicks (1987: 60) saw *Lonchura monticola* at Myola, in the Owen Stanley Mountains, the locality from which the proposed name is derived. This is a downward extension of the altitudinal range of the species, but Hicks does not mention any noticeable differences in colour and there are no specimens from Myola.

I designate AMNH No. 721471 as the lectotype of *Lonchura monticola myolae*, type locality Mt. Scratchley, Papua New Guinea. AMNH No. 721469 is then a paralectotype. Because the type localities of the syntypes of *Lonchura monticola monticola* and the lectotype of *L. monticola myolae* are the same, *myolae* becomes a junior synonym of *monticola*, as is *nigritorquis*. If, in the future, specimens are collected at Myola and found to differ from the nominate form then *myolae* would not be available. This applies also to the Myola population of *L. caniceps*, should it be found to differ (Restall, 1997: 149).

Mayr & Rand (1937: 245) identified specimens collected on Mt. Albert Edward and in Murray Pass as *L. monticola*. Thus the range of this monotypic species stretches from Mt. Albert Edward at least to Mt. Knutsford in the Owen Stanley Mountains, including the Wharton Range, with the status of the population at Guari, west of Mt. Albert Edward, still to be determined.

There are confusing contradictions in the ornithological literature as to exactly what the Wharton Range comprises. W. S. Peckover (ms) is preparing a gazetteer to ornithological collecting localities in the New Guinea area, and he defines the Wharton Range as a 16 km long ridge extending from Murray Pass (13 km south of Mt. Albert Edward East Dome) to 5.5 km north-northwest of Mr. Scratchley. It is that part of the Owen Stanley Mts. that lies between 08°30′ and 08°40′S and between 147°20′ and 147°28′E. Thus it includes Murray Pass but does not include either Mt. Albert Edward or Mt. Scratchley.

Lonchura tristissima bigilalae **Restall** (1995: 148) and ***Lonchura leucosticta moresbyae*** **Restall** (1995: 149). Snow (1997: 4) noted that the spelling of these two names should be amended to *L. t. bigilalei*, named for Ilaiah Bigilale, Principal Curator—Natural History, at the National Museum and Art Gallery in Port Moresby, and *L. l. moresbyi*, presumably on the grounds that Port Moresby was named by Captain John Moresby in honor of his father, Admiral Sir Fairfax Moresby (Wichmann 1910: 179). However, Restall (1995: 149) specifically states that the name is derived from the locality; thus, it should be spelled *moresbyensis*.

No mention is made by Restall of the fact that Coates (1990: 336–338) has taken the zoogeographically logical step of considering *leucosticta* to be a subspecies of *tristissima* as, where the ranges overlap in West Irian, Indonesia, intergrades are known (Mees 1958), and there is an intermediate population in the Port Moresby area (Coates 1990: 337). Following Coates's taxonomy, I would expect that the population of *tristissima* reported to Restall by Hicks (*in litt.*) from the Kiunga area is *L. tristissima leucosticta*. The type locality of that taxon is "300 miles up the Fly River;" and it has been collected at Lake Daviumbu, both localities not far from Kiunga; however, specimens from this area are badly needed.

There is no information on the labels of the syntypes of *bigilalei* and the holotype of *moresbyensis* to indicate exactly where they were taken, who took them, or whether they were even wild-caught. Specimens with full data are needed from the Port Moresby area. Until more is known about the variability within this population, and whether or not escaped cage birds have contributed to the variability, it is impossible to evaluate these two new taxa.

Restall's ranges of the various subspecies are a confusing combination of the old and new literature. For example, he says (p. 146): "I concluded that the four races of *L. tristissima* recognized by Paynter and Storer [=Mayr *et al.* 1968, see above] can be clearly separated and the confusion about them reduced significantly." Mayr *et al.* (1968: 378–379) recognized only *three* subspecies of *L. tristissima*, considering *leucosticta* a separate species. It is Coates's (1990) treatment of the subspecies' ranges that lists four subspecies of *tristissima*, including *leucosticta*.

Restall's map (p. 147), outlining the ranges of the different subspecies of "*tristissima*", is misleading. In Rand & Gilliard (1967: 596) the range of *L. t. hypomelaena* is restricted to the Weyland Mountains, and this is weakly supported by an examination of the specimens in the AMNH. Specimens in the AMNH from southwestern New Guinea, other than those from the Weylands, more closely match northern watershed birds and are included in *L. t. caliminoros.* Specimens from across its wide range are variable, but this seems to be individual, or perhaps clinal variation. Specimens from the Noord River east to the Port Moresby area in the south are *leucosticta*. The question of whether there is subspecific differentiation within this population, and the status of the 'intermediate'' population in the Port Moresby area, must await a study of specimens with full locality data. In all populations, the width of the black bar above the yellowish rump varies individually and with the make of the skin. Karkar Island is shown on the map but the birds from this locality are discussed in the text under the older name of Dampier Island, without comment. The question mark on the map in the Kiunga area is discussed above.

Restall (1997: 110–117) again discusses these populations, but until careful comparisons are made of specimens from throughout the range with reliable locality data, such discussion is premature. Descriptions of colours based on sight records are not sufficient.

***Lonchura maja vietnamensis* Restall** (1995: 151). The "type", presumably syntypes, listed by Restall (1995: 151) have not as yet been deposited in the AMNH.

***Lonchura atricapilla obscura* Restall** (1995: 154). Snow (1997: 4) has noted that Restall's holotype of this form is AMNH No. 447931, male, collected at Parit, Tjempaga, Sampit, S. Borneo (=Kalimantan, Indonesia). However, it was said to have been collected on 3 July 1935, based on incorrect information that I supplied. No. 447931 was collected on 16 June 1935. The paratype, No. 447932, was collected on 3 July 1935, at the same locality. This locality is given by Mayr (1938: 5) as "Parit, which is at the Tjempaga (Chamaga) River, about 20 miles above its junction with the Sampit River." This locality is shown on the map in Smythies (1981).

These two birds were reported by Restall (1995: 154) as being in a "collection from south Borneo by Ernst Mayr". They were reported on by Mayr (1938) but collected by J. J. Menden for the AMNH in south Borneo in 1935.

Restall's (1997: 129) statement that "In discovering these dark-backed birds, Mayr (1938) obviously referred back to *minuta* to distinguish them, but I have renamed them to solve the problem of misnaming" is obscure to me. Mayr (1938: 45) listed Menden's birds under *Lonchura atricapilla minuta* following Stresemann (1922: 88), who noted that *Fringilla minuta* Meyen was an older name, based on a young specimen, for what was later named *Munia (Dermophrys) jagori* by Martens.

Subsequent to Mayr's paper, Salomonsen (1953: 267) noted that *Fringilla minuta* Meyen 1834 is preoccupied by both *Fringilla minuta* Temminck 1807 and *Fringilla minuta* Wied 1830 and that *jagori* is the oldest available name. Salomonsen (1953: 266), however, considered that birds from all of Borneo belonged to *L. malacca gregalis* (type locality Mindanao), a subspecies that he had just described. This race was synonomized with *jagori* by Mayr *et al.* (1968: 381), who followed

Salomonsen in a broad interpretation of the species *Lonchura malacca*, including in it the populations formerly separated as *L. atricapilla*. Restall (1995: 152–154) gives his reasons for recognizing *atricapilla* as a separate species.

If comparisons are made between living birds or recently collected specimens and older museum specimens, the potential for colour change with age of specimen needs to be addressed. Restall named the south Borneo population based on the darker colouration of the live specimens he saw and painted, but noted that Menden's specimens have foxed until they are little different from the north Borneo birds (*i.e.*, do not match Restall's living birds). Yet he uses one of these very specimens as the type. Mayr refrained from naming Menden's birds even though he noted that they were darker, probably suspecting that such foxing would occur.

Lonchura atricapilla selimbaue **Restall** (1995: 155). The spelling of this name should be amended to *selimbauensis* (Snow, 1997: 4). The holotype is AMNH No. 831285, said to be from Selimbau 0°37′N, 112°08′E, Kalimantan Barut (=Barat), Indonesia. Both the holotype and a second specimen (AMNH No. 831824) from the same locality are unsexed. Presumably, the range of measurements of males and females given are based on the larger series of living birds seen by Restall, but we are not told how they were sexed, nor how the measurements were made.

See above for a discussion of the nomenclature of Bornean populations of *L. atricapilla* (=*L. malacca*).

Lonchura pallidiventer **Restall** (1996: 137) named this species, designating AMNH specimen No. 831287 as the holotype. The paratype (not syntype), a mummy, is AMNH No. 831288 (not 8311288).

Recently, van Balen (1998: 118) has suggested that these specimens may represent hybridization between *L. punctulata* and *L. leucogastra*.

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Three bird species new to Venezuela and notes on the behaviour and distribution of other poorly known species

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The studies of Phelps & Phelps (1950, 1958, 1963), Schäfer & Phelps (1954), and Meyer de Schauensee & Phelps (1978) greatly advanced knowledge of the distribution of birds in Venezuela. Publications sponsored by the Colección Ornithológica Phelps (e.g. Aveledo & Pérez 1994), and those of others (e.g. Lentino 1978, 1988; Lentino *et al.* 1984), also have contributed to making Venezuela's avifauna one of the best known in Latin America. In the last decade, access to remote areas, as well as an increased interest in nature tourism, has accelerated this base of knowledge.

Most of the information reported here was obtained between 1986 and 1997 during the course of field work by the author in Venezuela. Unreported records by others date to as early as 1969. Annotated information is presented for 40 species including 3 species new to the country, *Buteo jamaicensis, Chlorochrysa calliparaea*, and *Stigmatura napensis*. The first two of these new species are supported by visual records by multiple observers, while the third is verified by tape recordings. Three others (*Dendrexetastes rufigula*; *Pseudocolopteryx sclateri*; *Notiochelidon flavipes*) were not reported in Venezuela by Meyer de Schauensee & Phelps (1978), but were mentioned by Ridgely & Tudor (1989, 1994) and are now known from specimens, tape recordings, or numerous sight records. The remaining records represent major range extensions or are species for which new information is presented on behaviour, including three species endemic to Venezuela (*Syndacytle guttulata*; *Premnoplex tatei*; *Cistothorus meridae*). An additional 10 less noteworthy range extensions are mentioned in a final paragraph. Tape-recordings will be deposited in the Cornell Library of Natural Sounds, Ithaca, New York.

Species accounts

HOOK-BILLED KITE *Chondrohierax uncinatus*

This species occurs almost throughout the country in both arid and wet regions, and locally ranges up to at least 2,200 m. Seasonal migratory movements are likely, but have not been reported. On 14 June 1996, between 0700 and 0730 h, near the Amerindian community of El Tigre (southeast of Pto. Ayacucho), Amazonas, a minimum of 14 (maximum of 20) birds were observed moving, in a series of short flights, through a partially forested area. Their overall restlessness and steady northward progress (all disappeared within about 30 min) suggested these birds were migrating. None was observed feeding. Two days later in a forested area about 12 km north of El Tigre, 2 female-plumaged birds were seen perched at about 0900 h, and at about 1015 h and several kilometers eastward, a flock of 6 circled low over humid forest as they moved steadily northward, disappearing from view within a few minutes. There is only a small number of records of this species from southern Amazonas, Venezuela (i.e. Cerro Uritani; Cerro Yapacana).

SHORT-TAILED HAWK *Buteo brachyurus*

There are only a few records in the Sierra de Perijá, Zulia, the Andes of Lara and Trujillo, the coastal Cordillera in Carabobo and Aragua, the southern lowlands of Amazonas and Bolívar, and several offshore islands (Meyer de Schauensee & Phelps 1978). I report the following sight records: north of La Fria, Táchira (P. Alden); city of Mérida (1,500 m), and Universidad de los Andes (2,200 m), Mérida (P. Alden; K. Zimmer; S. Hilty; C. Parrish); Guanare, Portuguesa (P. Alden); San Fernando de Apure, Apure (P. Alden); southeast of Calabozo, El Sombrero, and near San Juan de los Morros, Guarico (P. Alden); Charallave, and Parque Nacional Guatopo, Miranda (P. Alden; C. Parrish; S. Hilty); Chichiriviche, Falcón (C. Parrish); Río Grande, Bolívar (S. Hilty); and km 133 (1,450 m) on the El Dorado-Santa Elena de Uairén highway, Bolívar (S. Hilty and D. Ascanio).

BLACK-AND-WHITE HAWK-EAGLE *Spizaetus ornatus*

Reported from the states of Aragua, Distrito Federal, Miranda, western Amazonas and southeastern Bolívar (Meyer de Schauensee & Phelps 1978), I note the following additional sites: 1 seen on 26 November 1982, 9 km northeast of La Fundación (1,200 m), Táchira (C. Parrish); 1 on 11 August 1983 above La Soledad (1,650 m), Barinas (C. Parrish); 1 on 5 May 1996 at Finca Vuelta Larga, near Guaraunos, Sucre (R. Ridgely and others); numerous records from Río Grande in northeastern Bolívar, the lowlands of southeastern Bolívar (El Dorado to km 134), dating from 1975 to the present (S. Hilty and others); and 1 seen 7 April 1985 at San Carlos de Río Negro, Amazonas (C. Parrish).

BLACK HAWK-EAGLE *Spizaetus tyrannus*

Reported from Mérida, Sucre, Monagas and Delta Amacuro (Meyer de Schauensee & Phelps 1978), I note the following additional localities: Río Catatumbo, Zulia (P. Alden, M. Gochfeld, M. Kleinbaum); Río Zulia, Zulia (S. Hilty); Refugio Curari, Falcón (C. Parrish); west of Capadare, Falcón, and east of Sanare, Falcon (P. Alden); numerous records in Aragua (Parque Nacional Henry Pittier), Distrito Federal and Miranda from 1972 to the present; scattered localities throughout Bolívar (Sierra de Lema; Santa Elena de Uairén; lower Río Caura) and Amazonas (Junglaven; San Carlos de RíoNegro) from 1983 to the present (many observers). These records suggest the Black Hawk-Eagle is relatively widespread in forested lowlands and foothills but there are no records for the eastern slope of the Andes.

RED-TAILED HAWK *Buteo jamaicensis*

One adult plumage bird with full rufous tail was observed for several minutes at relatively close range as it soared over the Universidad de Los Andes Forest Reserve (25 km W of Jaji, Mérida). This is the first record of this species in South America. The bird was seen at 2,100 m, at about 1030 h, on 6 February 1992 by S. Hilty, K. Zimmer and a party of 12 observers. It interacted briefly with a Short-tailed Hawk *Buteo brachyurus*, the latter diving aggressively at it, once resulting in both birds rolling over, with legs and feet extended in a defensive posture before resuming their separate soaring flights. Nearctic-breeding Red-tailed Hawks winter south to Costa Rica and western

Panama (Ridgely & Gwynne 1989) and there are a few reports from central Panama (R. Ridgely pers. comm.) but there are no previous reports from the continent of South America.

RED-BELLIED MACAW *Ara manilata*

On 23 June 1996 a flock of 5 birds was seen about 25 km S of Pto. Ayacucho, Amazonas as they flew westward across the Río Orinoco from Venezuela into Vichada, Colombia. The species was previously reported in Venezuela only from the lower Caura Valley in Bolívar eastward to the Guianas, and in Colombia from Meta and western Guaviare (formerly Vaupés) southward. Red-bellied Macaws feed heavily on the seeds of *Mauritia* sp. palms, and also roost in these palms (Hilty & Brown 1986). These palms are numerous in the Pto. Ayacucho area, a factor that may account for the macaw's presence here, at least occasionally. On 10 March 1998 a total of 19 Red-bellied Macaws, mostly in groups of 3–5, were heard (tape-recorded) and seen flying east over swampy plantations about 15 km south of Tucupita, Delta Amacuro. These are the first records for the state of Delta Amacuro.

SCALY-NAPED PARROT *Amazona mercenaria*

A flock of *c.* 15 birds was observed and tape recorded 18 February 1996 at approximately 1,700–1,800 m in Parque Nacional Yacambú, Lara. This is the northernmost record for this Andean species, which has previously been collected north to the state of Mérida (Meyer de Schauensee & Phelps 1978) and observed in Parque Nacional Guaramacal, Trujillo (Boesman 1998).

SPOT-TAILED NIGHTJAR *Caprimulgus maculicaudatus*

One female studied at length 5 January 1998 was perched about 1 m up in the edge of a thicket of *Thalia* sp. in a wetland adjacent to a raised roadway at Hato Cedral, western Apure. On 6 January 1998 a male was heard in a bushy pasture along the Río Caicara at Hato Cedral and was subsequently tape-recorded, and called in repeatedly for observation. These are the first records for Apure. On 10 March 1998 another was heard shortly after dark and tape recorded and seen about 20–25 km northeast of Tucupita, Delta, Amacuro, the first report for this state. In addition, R. S. Ridgely and others saw and tape-recorded several in pastures near El Palmar, Bolívar on 26–27 February 1988. The species is known from a single locality, Hato San Jose (*c.* 20 km W of La Paragua) in Bolívar (Smithsonian Institution Collection) and a sight record from Maripa in the lower Río Caura (R. Behrstock, pers. comm.). This species is infrequent and local in Venezuela.

LYRE-TAILED NIGHTJAR *Uropsalis lyra*

Single males seen 21 January 1993, 3 February 1994, and 18 January 1995 below Las Delicias (800 m), Táchira, are the first records for this state, and are from much lower elevation than the 2,500–3,000 m previously reported in Venezuela (Meyer de Schauensee & Phelps 1978). On two occasions a male appeared at dusk from beneath a bridge and perched on a slender open branch 3–4 m up over a stream. It then sallied out to the air; on several occasions the sallies were relatively long and rambling, taking the bird 100–200 m up or down the stream. This species has recently been found at a few additional sites at slightly higher elevations in the state of Barinas (D. Ascanio and G. Rodriquez, pers. comm.). Another male (without long tail plumes) roosting on a bridge that is part of a hydropower tunnel exiting near Altamira, Barinas, was shown to D. Ascanio, S. Hilty and others on 15 February 1998 by two local boys. This record, at 1,000 m, and the others noted above suggest that this species may be more numerous at lower elevations than previously suspected.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

Recorded in only 3 locations in mountainous terrain in Aragua and Miranda (Meyer de Schauensee & Phelps 1978), this species is widespread in small numbers in the lowlands. I here report a minimum of 19 sight records, representing 14 different localities, as follows: Parque National Guatopo, Miranda; San Silvestre, Barinas; 4 km S of Tucacas, Falcón; San Juan de Colon, Táchira (P. Alden); San Jose de Los Altos, Miranda; Cerro Tucusito, Anzoátegui; San Carlos de Río Negro, Amazonas (C. Parrish); Río Grande, Bolívar; El Dorado, Bolívar; 66 km south of El Dorado, Bolívar; 84 km south of El Dorado, Bolívar; Petrolea, Táchira; ca. 15 km southeast of Pto, Ayacucho, Amazonas; Finca Vuelta Larga near Guaraunos, Sucre (S. Hilty).

RACQUET-TAILED COQUETTE *Discosura longicauda*

Listed in Venezuela from only two localities in Amazonas by Meyer de Schauensee & Phelps (1978). I report 3 sightings of males from the Sierra de Lema (km 102), Bolívar, 17 February 1982 (C. Parrish); and 1 or more males (and females presumed this species) at the Río Grande Forestry Reserve, Sierra de Imataca, Bolívar on 20 February 1991, 13 February 1993, and 10 February 1995 (S. Hilty). A sighting is mentioned for Río Grande by Boesman (1998).

FIERY-BILLED AWLBILL *Avocettula recurvirostris*

A female seen at Rio Grande in the Sierra de Imataca, Bolívar by R. S. Ridgely on 28 February 1988, is the only record of the species in Venezuela since the initial specimen taken prior to 1916 at Cerro Roraima (Phelps & Phelps 1958). This sighting extends the known range about 350 km northward in Bolívar.

SWORD-BILLED HUMMINGBIRD *Ensifera ensifera*

Reported in Venezuela only in the Andes of Mérida (Meyer de Schauensee & Phelps 1978). I report the following sightings: 1 seen 19 January 1993, and another 3 February 1994 at 2,300 m near Zumbador, Táchira (S. Hilty with others), and 2 seen at 2,100 and 2,300 m respectively, in Parque Nacional Guaramacal, Trujillo, 20 and 21 February 1996 (S. Hilty, D. Ascanio, and others). As with many highland hummingbirds, this species undertakes seasonal elevational movements. During the early rainy season months of May to August it occurs in the upper Santo Domingo Valley, Mérida, ascending to 3,000 m or more (i.e. at the Hotel Los Frailes), but descends to lower elevations during the driest months of January to March.

WHITE-BELLIED PICULET *Picumnus spilogaster*

One bird seen by Hilty and several others on 9 February 1994 at Hato Los Indios (06°54′N, 68°20′W), southeastern Apure, represents a small extension of the range of this species, infrequently reported away from the Río Meta and Río Orinoco. Single birds and pairs were observed on 23 and 24 August 1994, and 13 January 1997, and 10 March 1998 in the vicinity of Tucupita, Delta Amacuro. The song, lasting about 3 sec, is a thin, high trill of about 25–35 notes that descends slightly in pitch (a song pattern found in some *Picumnus*) and is unlike that of the smaller Black-dotted Piculet, *P. nigropunctatus*, which occurs with it in eastern Venezuela. The latter's song is 2–4 high, thin *seeet* notes, rather halting and well-separated, a song pattern also found in some species of *Picumnus*.

CINNAMON-THROATED WOODCREEPER *Dendrexetastes rufigula*

A species not reported in Venezuela by Meyer de Schauensee & Phelps (1978) but known from numerous sight records in the Río Grande Forestry Reserve, Bolívar, dating to the late 1970s (C. Parrish, S. Hilty, P. Alden, T. Parker, D. Finch, M. Van Biers, and others). Noted as occurring in Venezuela by Ridgely & Tudor (1994), there is a specimen (alcoholic) in the Colección Phelps (M. Lentino pers. comm.). Areas along the El Palmar road west of Río Grande, where the species was once seen regularly, are now deforested but the species doubtless occurs in areas remote from the road.

GUTTULATED FOLIAGE-GLEANER *Syndactyla guttulata*

Endemic to the coastal cordillera of northern Venezuela, this species differs somewhat from its southern ally, the Lineated Foliage-gleaner (*S. subalaris*), in its thicker and upturned lower mandible. Like others of the genus, Guttulated Foliage-gleaners forage in thick undergrowth where they often accompany other birds such as antwrens, warblers and Common Bush-Tanagers *Chlorospingus ophthalmicus* in small mixed species flocks. Their foraging behaviour, observed between 1993–98 in Parque Nacional Henry Pittier, has heretofore remained undescribed. They hop rather heavily in foliage and often hang or cling sideways to understory branches to inspect dead twigs and broken branch and twig ends, and regularly use their peculiar bill to pry off loose or flaking bark, or chip it off with a characteristic chiseling motion recalling that of *Simoxenops* and *Neoctantes*. On 3 September 1994 the species was observed attending a large swarm of *Echiton* sp. army ants.

WHITE-THROATED BARBTAIL *Premnoplex tatei*

One individual seen by S. Hilty and P. Boesman (tape-recorded by Hilty) 27 August 1994, on the north slope of Cerro Negro (1,600 m) on the Sucre/Monagas border, represents the first verification of this species (ssp. *tatei*) away from the coastal Paria Mountains in almost 50 years (Collar *et al.* 1992). This bird remained mostly 0.2–3 m up in cluttered forest understory dominated by small palms and arums, and once hopped in the open along a large, bare log wedged horizontally about 2 m up in boulders and dense vegetation. Our attention was drawn to this individual by its series of rather low-pitched, whistled couplet or triplet notes which continued without interruption for several minutes. The bird was loosely associated with a pair of Grey-headed Warblers *Basileuterus griseiceps*, a species whose status and distribution has been discussed by Boesman & Curson (1995). We did not observe the barbtail hitching along and climbing up the lower part of tree trunks in the manner of allied Spotted Barbtail *Premnoplex brunnescens*. Instead we only noted it hopping in vegetation and on boulders and logs close to the ground. The vocalizations also appear to differ from the thin-trilled song of *P. brunnescens*.

RUFOUS-RUMPED ANTWREN *Terenura callinota*

Previously known from a single specimen from the Perijá Mts. (Meyer de Schauensee & Phelps 1978), I report records from both slopes of the Andes as follows: on the east slope, single males were seen 6 August and 8 August 1982 in forest canopy at 1,400 m on the La Soledad Tunnel Rd, 5.1 km southwest of La Soledad (08°48′N, 70°34′W), western Barinas (C. Parrish); a female seen in the same area 28 December 1982, and another (sex unrecorded) seen 13 October 1983 (C. Parrish); 4 female-plumaged birds were seen 23 April 1996, at the La Soledad tunnel area at 1,450 m (08°48′N, 70°34′W), northwest Barinas (R. Ridgely and others, *in litt.*). On the west slope of the Andes in Mérida, a male was tape-recorded singing, and seen 20 June 1993, and again 19 June 1994, in the canopy of cloud forest about 15 km east of La Azulita (1,850 m), Mérida (S. Hilty).

LESSER WAGTAIL-TYRANT *Stigmatura napensis*

Six individuals were observed and tape-recorded 23 June 1996 on a small (ca. 1.5 ha), flooded river island in the Río Orinoco about 25 km upriver (south) from Pto. Ayacucho, or about 15–20 min by boat above the Camturama Tourist Lodge (and see Boesman 1998). Up to 4 pairs were observed on this same island by Hilty and others on 3 January 1998. Vegetation on the island consisted of brushy early succession stage shrubs and young trees. These are the first records for this river island specialist anywhere in the Orinoco river drainage and they represent a range extension of nearly 1,000 km northward from nearest known sites on the Amazon River in Brazil and Colombia (Ridgely & Tudor 1994).

BEARDED TACHURI *Polystictus pectoralis*

An enigmatic species, known from a number of mostly grassland sites in Falcón, Barinas, Apure, Carabobo, Amazonas and Bolívar, but very infrequently reported anywhere in Venezuela during the last two decades. It's population appears to be in sharp decline. In light of the paucity of modern records I report 3 recent sightings as follows: 1 male seen at km 202 on 16 February 1995 (Hilty), 1 female at km 136

(Monumento del Soldado Pionero) on 12 January 1996 (S. Hilty, D. Ascanio, N. Currie and others), both along the El Dorado—Santa Elena de Uairén highway in eastern Bolívar, and 1 male found by F. Thompson on 3 January 1997 and subsequently seen by Hilty, D. Ascanio and others in a shrubby grassland about 15 km wsw of Santa Elena de Uairén, Bolívar (04°33'N, 61°11'W). All our observations were in relatively tall grass (0.8 m or higher) or grass and shrubs that had probably not been burned for at least a year. The burning of almost all grasslands during the dry season in Venezuela is believed to be a major factor causing the population decline of this species (Collar & Wedge 1995).

CRESTED DORADITO *Pseudocolopteryx sclateri*

Not reported by Meyer de Schauensee & Phelps (1978) but known from numerous sight records since at least the early 1980s (C. Parrish, A. Altman, M. L. Goodwin, M. Lentino, etc.), and from a number of unpublished specimens (Colección PROFAUNA, Maracay, Aragua), mostly from the Embalse de Tacarigua, Falcón (11°03'N, 68°25'W), and in or near the coastal northwestern end of Parque Nacional Henry Pittier, Aragua. I report observations of 9 individuals seen on 24 June 1994 at the Embalse de Tacarigua, eastern Falcón, including definite breeding evidence (pair of adults with recently fledged juvenile). All individuals were seen or flushed from extensive patches of *Polygonum* (2 individuals also in tall rushes) growing at the edge of the lagoon. Crested Doraditos typically remain hidden in vegetation at the edge of water and are easily overlooked.

RIVERSIDE TYRANT *Knipolegus orenocensis*

An uncommon flycatcher in Venezuela. A pair observed 23 June 1996 and 2 more on 3 January 1998, on the same flooded river island (ca. 25 km south of Pto. Ayacucho) as *Stigmatura napensis* (above), represent a small southward range extension. Previously known in Venezuela from several sites downriver on the Río Orinoco, the closest being Puerto Páez, about 100 km downriver from the present site (Meyer de Schauensee & Phelps, 1978).

AMAZONIAN BLACK-TYRANT *Knipolegus poecilocercus*

Observations and tape recordings by Hilty of displaying males in January, February and March, 1992–98 at Hato Cedral, Apure, represent a small northward extension of the range of this species. Previously known in Venezuela from Amazonas and El Amparo on the Río Arauca in western Apure (Meyer de Schauensee & Phelps 1978). This species may prove to be more widespread in wetter parts of the *llanos* of central Venezuela. It has not been observed in the late May to October wet season at Hato Cedral and some seasonal migratory movement may occur.

WHITE-THROATED KINGBIRD *Tyrannus albogularis*

Known in Venezuela only from a few specimens taken near Santa Elena de Uairén, Bolívar in the extreme southeastern corner of the country (Meyer de Schauensee & Phelps 1978). The species appears to be resident and breeding there as there are many records during the austral summer months of January and February (K. Zimmer, S. Hilty, D. Ascanio), a time when austral breeders are unlikely in Venezuela. A pair also was seen 18 February 1994, about 60 km S of Pto. Ayacucho, Amazonas by K. Zimmer; a second pair was seen at the Camturama Lodge, about 20 km S of Pto. Ayacucho, on 17 June 1996 (S. Hilty and others). A single individual carefully studied at El Palmar, Bolívar, 1 July 1994 (S. Hilty and P. Boesman) could have been an austral migrant. Near Santa Elena de Uairén the species occurs in the vicinity of scattered *Mauritia* palms in savannas, on fences in grassland with a few scattered low shrubs, and in low-lying areas along the borders of gallery forest. This species closely resembles the much commoner Tropical Kingbird *T. melancholicus* but has higher-pitched, more rapidly trilled calls.

PALE-FOOTED SWALLOW *Notiochelidon flavipes*

Although not reported from Venezuela by Meyer de Schauensee & Phelps (1978), this species' presence in Venezuela has been documented by Lentio (1988), Ridgely & Tudor (1989), and Ryan & Lentino (1995). In addition to the sites mentioned by these authors I add 2 other new localities to its range. A flock of *c.* 25 was seen at an unusually low elevation of 1,500 m, along the San Isidro Tunnel Rd. in northwestern Barinas on 29 January 1994 by D. Stejskal, C. Benesh, S. Hilty and others. The flock was studied carefully by all observers through a 50x Questar telescope. Most were perched on high bare branches in an emergent tree. About 20–25 were seen in Parque Nacional Guaramacal on 29 June 1995 (S. Hilty; M. L. Goodwin), and smaller numbers there on 21 February 1996 and 20 February 1997 (S. Hilty; D. Ascanio), all between 2,075–2,400 m (also see undated record in Boesman 1998). Pale-footed Swallows are typically seen in small flocks of 3–8, or occasionally more.

PARAMO WREN *Cistothorus meridae*

Reported only from the state of Trujillo and Mérida, Venezuela (Meyer de Schauensee & Phelps 1978; Ridgely & Tudor 1989), I have seen and tape-recorded this species on 20 January 1993, 1 February 1994, 15 January 1995, and 19 January 1996 at Páramo Batallón (08°05′N, 71°55′W), northern Táchira. This species was also seen and tape-recorded at this locality in 1995 by R. S. Ridgely and others.

PROTHONOTARY WARBLER *Protonotaria citrea*

Known from specimens from the Maracaibo region, the coast (mainly mangroves), and offshore islands of Los Roques and La Orchilas (Meyer de Schauensee & Phelps 1978), there are no records more than a very short distance inland in Venezuela. I report the following inland records: a female seen in gallery forest 26 February 1996 at Hato El Frio (7°35′N, 68°50′W), Apure; a male 17 February 1998 along the Río Caicara at Hato Cedral (7°28′N, 69°18′W), Apure (this latter bird found independently a few days later by D. Fisher); a male 23 January 1993 in the eastern foothills (*c.* 300 m) of the Sierra de San Luis, Falcón, and a female-plumaged bird in ranchland near Cerro Misión, Falcón, 8 February 1998. R. Behrstock and J. Kingery report a male seen near Caurama, lower Río Caura, Bolívar, 3 March 1993, and R. S. Ridgely and K. Zimmer saw one at Hato Piñero, Cojedes, February 1992.

BAY-BREASTED WARBLER *Dendroica castanea*

A bird in immature plumage was well studied on 12 January 1991, by Hilty and K. Zimmer and by several other observers as it foraged in large samán (*Pithecellobium* sp.) trees in the yard of the old hacienda at Hato Piñero, east of El Baul, Cojedes. This is the first record of this species for Cojedes (Meyer de Schauensee & Phelps 1978). In Venezuela it winters chiefly in foothill and lower montane elevations, but regularly in the lowlands of western Colombia and southern Middle America and a few records as far south as northern Ecuador (R. S. Ridgely pers. comm.).

CHESTNUT-SIDED WARBLER *Dendroica pensylvanica*

Known from 1 specimen (Colección Phelps) and 2 unpublished sight records, 10 March 1970, and 27 March 1976, both below 500 m on the north slope of Parque Nacional Henry Pittier, Aragua (P. Alden *in litt.*). I report four additional sightings of this species in nonbreeding plumage and one in partial breeding plumage, as follows: 1 seen 26 January 1994, another 24 January 1995, both in exactly the same area along a small stream about 12 km above Ocumare, Aragua (400 m); 1 seen 4 February and 23 March 1998 (probably same bird) at the Rancho Grande Biological Station (1,000 m), Aragua, and a bird in partial breeding plumage 25 March 1998 on a fork of the Turiamo Rd. (150 m), about 5 km E of Turiamo, Aragua by Hilty, K. Kaufman and others. It is noteworthy that the species has, so far, been reported only in the state of Aragua in Venezuela. The easternmost record in South America is 1 seen 19 November 1996 at Georgetown, Guyana by R. S. Ridgely and others (pers. comm.).

YELLOW-RUMPED WARBLER *Dendroica coronata*

A moulting male in partial adult plumage and showing a small but distinct patch of yellow on the throat was observed on 19 January 1988 at the Hotel Los Frailes (3,000 m), Mérida. Initially the bird was seen by B. Kautest, and later repeatedly by S. Hilty and others. This bird was believed to represent the western ssp. *auduboni*, a form not previously reported in South America. There is a single specimen (from Delta Amacuro) of the eastern ssp. *coronata* in Venezuela (Meyer de Schauensee & Phelps 1978).

CERULEAN WARBLER *Dendroica cerulea*

Two males were seen by R. S. Ridgely, T. Meyer and others on 2 March 1988 in the upper zone of the Sierra de Lema, about 1,450 m, in easternmost Bolívar (R. S. Ridgely, pers. comm.). This species has not previously been reported away from the Andes or south of the northern cordilleras in Venezuela (Meyer de Schauensee & Phelps 1978).

GREY-THROATED WARBLER *Basileuterus cinereicollis*

Four individuals of this poorly known species were heard and two were seen 20 June 1994, approximately 10 km by road southeast of and above La Azulita, Mérida, at elevations between 1,475 and 1,510 m. Each of the four singing birds was in dense undergrowth on very steep slopes along an approximately 0.5–0.7 km section of road. Two birds I observed for short periods were retiring and kept mostly 1–5 m up and out of sight, even when singing. Taped playback produced responses ranging from birds remaining hidden to 1 individual that appeared in the open and sang repeatedly from perches 2–9 m up. The thin, weak song, a wispy, very high-pitched, *swee-swee—seet!* with slight variations but with last note usually higher-pitched, is insignificant and easily overlooked. Singing may be seasonal, perhaps stimulated by the onset of the rainy season, as I have visited this area many times during the drier months of January–March without hearing them.

WHITE-BELLIED DACNIS *Dacnis albiventris*

Previously known from only two localities (near Cerro Duida and El Carmen, Amazonas) in Venezuela (Meyer de Schauensee & Phelps 1978) and an unpublished sight record 13 May 1992 at the Junglaven Lodge, Amazonas (R. Behrstock, B. Finch), this species is rare and poorly known throughout its range (Ridgely & Tudor 1989). A flock of 9 was observed 15 June 1995 along forest edge between Pto. Ayacucho and the Amerindian community of El Gavilán, Amazonas by Hilty and several others. The flock consisted of 2 adult males (with golden eyes), at least 5 female-plumaged birds (dark eyes), and 1–2 subadult males which resembled females but showed blackish flight feathers. This group arrived and departed more or less together to feed on small berries of a Melastomataceae tree (*Miconia* sp.) about 8–10 m high, that was growing along a narrow road through tall lowland forest. The flock returned at least six times during a 2 h period, feeding for 5–8 min each time, but only when other tanagers, manakins and honeycreepers were present. When feeding in the melastome tree no vocalizations were heard, but upon departure, flying off 100 m or more and back up to the canopy, they gave soft, silky *seeeee* calls. The flock always returned to the high canopy, often to one or more legume trees (family Mimosoidae) where they foraged restlessly in the highest, outer foliage, inspecting the small leaflets of doubly-compound leaves, occasionally hanging upside down, and typically flying off some distance from the top of one high crown to another in little straggling groups of 3–6. Away from the fruiting tree these birds were observed only in monospecific groups.

On 16 November 1996 a group of 3 was seen foraging in the highest part of the crown and outer foliage of an emergent rainforest tree (at least 45–50 m) that supports a section of the rainforest canopy walkway at the ACEER Laboratory (Amazon Center for Environmental Education and Research), not far from the mouth of the Río Napo, Loreto, Peru. As in Venezuela, these birds were very active and remained mostly in outer canopy foliage. They spent less than 1 min in the tree, during which time several other honeycreepers and tanagers were present, before flying off perhaps 200 m to the crown of another emergent tree. These observations suggest that this species occurs principally in the crowns of the highest emergent treetops in humid lowland forest, a factor that has probably contributed to the scarcity of records for this species.

ORANGE-HEADED TANAGER *Thlypopsis sordida*

At least 4 of these distinctive birds were observed 23 June 1996 on the same flooded Orinoco river island in Amazonas as *Stigmatura napensis* and *Knipolegus orenocensis* (above). This is the first published record for Amazonas. Two were also seen there 3 January 1998. Previously known in Venezuela only from the lower Río Orinoco in the states of Bolívar and Anzoátegui (Meyer de Schauensee & Phelps 1978) where it is confined mainly to early successional stage vegetation on river islands and river banks.

ORANGE-EARED TANAGER *Chlorochrysa calliparaea*

Previously unreported in Venezuela, a single male of this striking species was well studied by Hilty and others as it foraged with a mixed species flock along the San Isidro Tunnel Road (08°52′N, 70°35′W), extreme northeast Barinas on 9 January 1987. It was observed again in February 1987 by J. Pierson and others, and subsequently up to 3 individuals (male, female, and imm.) have been seen in various years since; 1 was seen as recently as 4 February 1997 by Hilty. Recorded on the eastern slope of Colombia's Andes north only to western Caquetá, the present record extends the known range more than 500 km northward (Hilty & Brown 1986). Significantly, in this area very few roads penetrate the narrow elevational band of cloud forest where this species occurs, and future work may reveal that the species has a more continuous distribution.

FINSCH'S EUPHONIA *Euphonia finschi*

A male and 3 female-plumaged birds were seen and tape-recorded at the edge of gallery forest on 28 February 1994 about 16 km north of Santa Elena de Uairén, southeastern Bolívar. A single male was seen, and again tape-recorded 18 February 1995 in the same locality, and a male and female were seen 1 March 1998. This pair was observed eating mistletoe berries in the canopy of a gallery forest tree. Previously known from only 1 specimen in Venezuela from near Cerro Roraima (Arabopo) to the north in Bolívar (Meyer de Schauensee & Phelps 1978). The species is relatively numerous eastward in the Guianas and appears to be resident, in small numbers, in the extreme southeastern portion of the Gran Sabana adjacent to Guyana.

OLEAGINEOUS HEMISPINGUS *Hemispingus frontalis*

I report simultaneous group singing in this widespread but inconspicuous forest understory bird of the Andes and coastal cordilleras of Venezuela. Shortly after dawn on 22 January 1995 I observed 4 birds foraging alone through the understory of wet montane forest at 1,800 m and about 300 m north of the junction of the El Limón Road with the main road to Colonia Tovar, Aragua. About once every 30 sec the 4 simultaneously burst into a very rapid, chattery quartet consisting of a fast stream of chippy notes, the performance lasting about 5 sec. When one bird (the same each time?) started singing the others joined almost instantaneously with identical songs which sounded slightly out of synchrony, producing a vibrating chorus. Thereafter all 4 resumed foraging, frequently hanging downward to inspect suspended and curled dead leaves or piles of accumulated dead leaves and debris in thickets. The birds stayed relatively close together as they foraged and sang *c.* 25 times over a span of 12 min of observation. Simultaneous singing by groups of birds has been reported in at least 4 other species of *Hemispingus*. Furthermore, 2 other species of *Hemispingus* regularly sing duets (Isler and Isler 1987). Simultaneous singing also is known to occur in a few other Neotropical species, e.g. groups of 3 Rufous Cacholotes *Pseudoseisura cristata* in Brazil (K. Zimmer pers. obs.), groups of 3 Plain Softtails *Thripophaga fusciceps* in Peru, and groups of 4 or more Black-fronted *Monasa nigrifrons* and White-fronted Nunbirds *M. morphoeus* in Peru (Hilty).

SWALLOW TANAGER *Tersina viridis*

This species breeds locally in the northern Andes and across Venezuela's coastal mountains from Yaracuy to Sucre from about February to June or July, then migrates away (Hilty, pers. obs.). Little is known of the length or duration of these migrations, or of the destination(s) of these birds, although single birds, pairs, or small groups have been recorded almost throughout the states of Amazonas and Bolívar during the period when they are absent from breeding areas in the northern part of the country. A large, presumably migratory (premigratory?) congregation of these birds seen on the north slope of Cerro Negro, on the Sucre/Monagas border is, therefore, of interest. At about 1600 h, on 26 August, P. Boesman and I observed a flock of more than 60 individuals perched on high dead branches of a large tree emergent over coffee. A few minutes later we observed a second flock, estimated to contain *c.* 125 birds, rise up and fly northward over the forest. Minutes later a third flock of *c.* 20 were also observed flying northward. Flocks of this size—apparently pre-migratory flocks—have not been reported in this species.

BLACK-STRIPED SPARROW *Arremenops conirostris*

One was seen and tape-recorded on 16 June 1996 as it sang from a brushy roadside ditch filled with water, a few km E of Samariapo (05°15′N, 67°48′W), Amazonas. The general habitat in this area is scrubby, white sandy soil forest and low bushy regrowth mixed with savanna. Previously reported from several localities in adjacent Bolívar (Caicara, 07°37′N, 66°10′W; Santa Rosalia 07°29′N, 65°39′W; Río Cuchivero *c.* 07°40′N, 65°57′W) by Phelps & Phelps (1963), this is the first Amazonas record and extends the range about 300 km southward.

SLATY FINCH *Haplospiza rustica*

I report the first records for Táchira, and present information on territory size and behaviour in this nomadic species that seeks erratically seeding patches of dying *Chusquea* bamboo for breeding. On 14 and 15 January 1995, at 2,350 m and just below Páramo Batallón, Táchira, I observed at least 12 male Slaty Finches stationed on small territories along a roadside through a large area of dying *Chusquea* bamboo with a very heavy seed crop. Each male was *c.* 50–75 m from its nearest neighbour. Songs were variable but usually complex series of phrases consisting of many buzzes, trills and short notes given by males perched in bamboo. Males also frequently performed flight songs which were similar but longer. Song activity remained very high throughout the morning. Four months later in early May 1995, when this site was visited by R. S. Ridgely, no Slaty Finches were present and the seed crop appeared exhausted (R. S. Ridgely pers. comm.). This species is infrequently encountered away from seeding bamboo and is probably dependent upon it for successful breeding. Such seedings of bamboo are rare or at least unpredictable in occurrence and large areas of intact habitat are required for a species to follow this breeding strategy successfully. Deforestation and forest fragmentation pose a threat for this and other species of bamboo seed followers.

Additional records

The following additional records represent range extensions (within a state, or new for the state), or unusual dates for migrants. All are by the author unless noted. An asterisk (*) indicates tape-recorded verification. Stripe-backed Bittern *Ixobrychus involucris* 23–24 March 1993, Hato Cedral, Apure, and 26 January 1995, Boca del Tocuyo, Falcón (no breeding evidence); Least Bittern *Ixobrychus exilis* 19–21 March 1994, Hato Cedral, Apure; 1 seen 6 March 1998 at a lagoon 10 km W of El Palmar, Bolívar, by M. Fritz, D. Ascanio, Hilty and others (no breeding evidence); *Barred Parakeet *Bolborhynchus lineola* 20 and 21 February 1996, Parque Nacional Guaramacal, Trujillo; *Pavonine Cuckoo *Dromococcyx pavoninus* 22 February 1982 (C. Parrish) and 24 February 1991, Sierra de Lema, Bolívar (1,000 m), and 3 February 1995, above La Azulita, Mérida (1,400 m); *Scaled Antpitta *Grallaria guatimalensis* 7 August 1994, Cerro Negro, Sucre/Monages border (1,550 m); White-naped Xenopsaris *Xenopsaris albinucha* 3 July 1993, 10 km SW El Palmar, Bolívar; *Rufous-crowned Tody-Tyrant *Poecilotriccus ruficeps*, pairs seen 21 February 1996 (and videotaped by Ellen Luce), 6 February 1997, and 11 February 1998, 2,100–2,300 m, Parque Nacional Guaramacal, Trujillo, and also reported here by Boesman (1998); 1 immature male American Redstart *Setophaga ruticilla* 22 August 1992, Chuao (10°30′/67°32′), Aragua was an early migrant; 1 Blue-backed Conebill, *Conirostrum sitticolor*, seen 20 February 1996 (with D. Ascanio) at 2,300 m, and another seen 11 February 1998 at 2,600 m, Parque Nacional Guaramacal, Trujillo; Chestnut-vented Conebill *Conirostrum speciosum*

14–15 January 1994, Hato Cedral, Apure; and pair well-studied 10–15 km W of Tumeremo, in northeastern Bolívar, 6 March 1998 (Hilty, D. Ascanio and others).

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Important ornithological records from the Rio Juruá, western Amazonia, including twelve additions to the Brazilian avifauna

by Andrew Whittaker & David C. Oren

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The Rio Juruá is one of the largest white-water tributaries of the Amazon. Its drainage is mostly within Brazilian territory, but the basin also includes a portion of southeastern Peru. There are only two important works on the avifauna of the Juruá. Nils Gyldenstolpe's (1945) major treatise deals with the bird specimens in the Stockholm museum collected by the Olalla brothers in 1936 (Olalla 1938) on the lower and middle sections of the river in Amazonas state, Brazil. Novaes' two reports (1957, 1958) are on his own expedition to the upper Juruá in Acre from June to September 1956. Here we report the results of new research on previously unexplored portions of the river basin (see Oren & Albuquerque (1990)), located between the relatively well-studied areas of central Brazilian Amazonia (e.g. Cohn-Haft *et al.* 1997, Stotz & Bierregaard 1989 and Willis 1977) and Peruvian Amazonia (e.g. Parker *et al.* 1994 and Terborgh *et al.* 1990).

Here we present an annotated list of the most important ornithological records from three field expeditions undertaken in the Juruá River basin, in the states of Amazonas and Acre, Brazil. The first was [part of a larger enterprise] to determine the importance of the Juruá as a biogeographical barrier. Quantitative data from other vertebrate inventories undertaken during this expedition between July 1991 and June 1992 at 12 forest sites have uncovered many noteworthy species records of mammals, reptiles and amphibians from along the Juruá (Peres 1993, Patton *et al.* 1994, C. Peres, C. Gascon, J. Malcolm, J. Patton and M. N. F. da Silva, unpublished data). The second series of expeditions was part of a research program to study the management of forest resources by rubber tappers in Brazil's first Extractivist

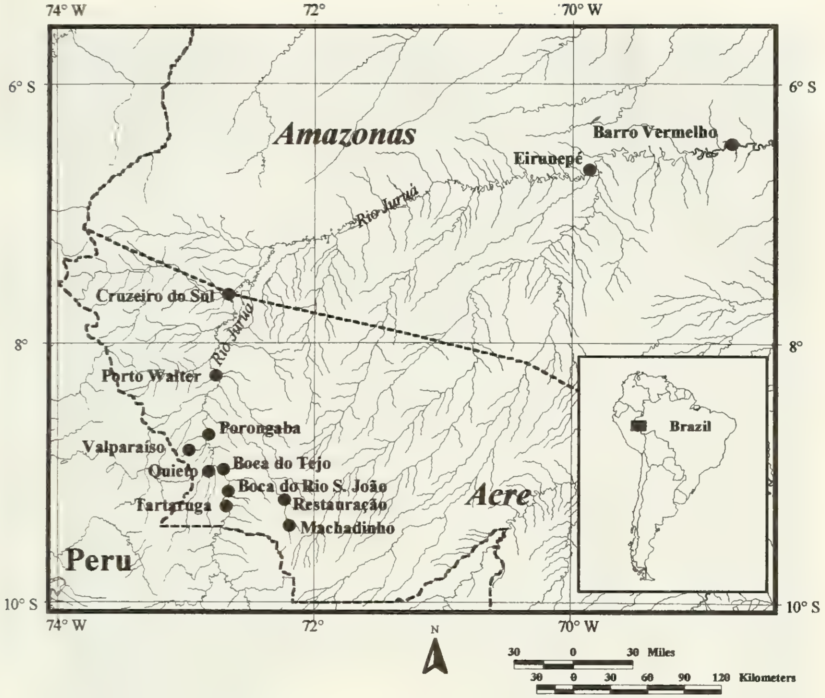
Reserve in 1994 and 1995 (Cunha in press). The third expedition was the initiation of a faunal inventory program in the Serra do Divisor National Park in April and May 1996.

We present twelve additions to the avifauna of Brazil: Black-capped Tinamou *Crypturellus atrocapillus*, Black-billed Cuckoo *Coccyzus erythropthalmus*, Chimney Swift *Chaetura pelagica*, Scarlet-headed Barbet *Eubucco tucinkae*, White-lined Antbird *Percnostola lophotes*, Rufous-fronted Antthrush *Formicarius rufifrons*, Round-tailed Manakin *Pipra chloromeros*, Sulphur-bellied Flycatcher *Myiodynastes luteiventris*, Black-faced Cotinga *Conioptilon mcihennyi*, Yellow-green Vireo *Vireo flavoviridis*, Casqued Oropendola *Psarocolius oseryi*, and Black-and-white Seedeater *Sporophila luctuosa*. Records of *C. erythropthalmus*, *P. lophotes, C. mcihennyi, P. oseryi*, and *S. luctuosa* are supported by voucher specimens, and *C. atrocapillus*, *Formicarius rufifrons*, and *M. luteiventris* by tape recordings. The records of *C. pelagica* and *E. tucinkae* were of reliable sight records. Additionally, specimens of Blue-headed Macaw *Ara couloni*, Emerald Toucanet *Aulacorhynchus prasinus*, Manu Antbird *Cercomacra manu*, and Scarlet Tanager *Piranga olivacea* were collected for the first time in Brazil. We also include notes on behaviour, vocalisations and taxonomic status of several poorly-known species, significant extensions of known ranges and new insight into the wintering areas for some boreal migrants.

Study sites and methods

Field records were obtained primarily from five sites along both the central and upper regions of the Rio Juruá and its tributaries (Fig. 1): 1-*Barro Vermelho*, Rio Juruá, Amazonas (6°28′S, 68°46′W); 2-*Porongaba*, Rio Juruá, Acre (8°45′S, 72°49′W); 3-*Boca do Tejo*, Rio Juruá, Acre (8°58′S, 72°42′W); 4-*Restauracão*, Rio Tejo, Acre (9°02′S, 72°16′W); 5-*Valparaíso*, Igarapé São Luís, Acre (8°50′S, 72°54′W). Both principal regional forest types (*terra firme* and *várzea*, the latter subject to seasonal flooding) were surveyed from the first three sites on both banks of the Juruá. At Restauração and Valparaíso *terra firme* forest dominated, though *várzea* was present in limited areas. Less extensive habitats such as secondary growth, riverine edge, oxbow lakes, and bamboo were also visited and surveyed whenever possible. Further opportunistic records were made during boat travel along watercourses while moving to and from sampling localities, (Eirunepé (6°40′S, 69°52′W) in Amazonas, Cruzeiro do Sul (7°38′S, 72°36′W) in Acre, along the Rio Tejo to Restaura¢ão, and along the Igarapé São Luís). Observations from boats were made when weather permitted, from first light around 0545 h to 1100 h and 1530 h until dusk at 1800 h. When we use the terms "right bank" and "left bank," this terminology refers to the traditional Amazonian system, based on the hand each bank is on *when descending a watercourse*.

We used both auditory and visual survey methods to record the avifauna. Visual sampling was made with 10 × 40 binoculars and a 30 × telescope and tripod. AW carried out auditory surveys with a Sony TCM 5000 tape recorder, Sennheiser ME 80 directional microphone



74° W
72°
70° W
6° S
8°
10° S
Amazonas
Acre
Peru
Brazil
Rio Juruá
Barro Vermelho
Eirunepé
Cruzeiro do Sul
Porto Walter
Porongaba
Valparaíso
Quieto
Boca do Tejo
Boca do Rio S. João
Tartaruga
Restauração
Machadinho
N
30 0 30 Miles
30 0 30 60 90 120 Kilometers

Figure 1. Map of the upper Rio Juruá, western Brazil, with the major collecting and observation localities indicated.

and playbacks at the first four sites; DCO did the same with similar equipment at Valparaíso. AW tape-recorded as site vouchers as many different species as possible, which will be archived at the British Library National Sound Archive (London). DCO's tapes were deposited at the Museu Paraense Emílio Goeldi/CNPq/MCT, (MPEG) Belém, Pará, Brazil. Special specimen collecting permits were issued by IBAMA, the Brazilian environmental authority. Understorey birds were sampled and voucher specimens collected using 2.5 × 12 m mist nets set from ground level to 2 m high. Mist net lines of either 16 or 30 nets were run. In addition, random nets were located in other types of vegetation such as bamboo and secondary growth. Specific canopy and midstorey species were collected using a shotgun. All specimens are deposited in the serial ornithological collections of the MPEG.

BLACK-CAPPED TINAMOU *Crypturellus atrocapillus*

A single bird tape-recorded by AW at Restauração on the upper Rio Tejo on 24 November 1994. The bird called at dusk from disturbed *terra firme* forest edge with bamboo and was heard on 4 other evenings after this date. During fieldwork in 1995 AW heard calling birds from the following sites, 7 May: Boca do Rio São João (9°09'S, 72°40'W); 10 December; Caipora (9°17'S, 72°41'W); 26 May and 14 December: right bank of the Rio Amônia (9°00'S, 72°50'W). These represent the first Brazilian records for this species, which was previously known only from southeastern Peru north at least to Cuzco and northern Bolivia (Ridgely, pers. comm.).

ORINOCO GOOSE *Neochen jubata*

This once was presumably a common and widespread species throughout most of its wide range in Amazonian Brazil, including the Rio Juruá; however, it has become locally extinct due to hunting pressure in most areas. We found no evidence of its continued existence in all the upper Rio Juruá. However AW recorded it as local and fairly common in regions sparsely inhabited by humans along the middle Rio Juruá a day's travel downstream from Eirunepé, Amazonas. Here pairs and a few family groups were observed, some of them large. All birds encountered were very wary; head-bobbing movements were noted even at great distance and increased in frequency as the boat approached. The largest group was 18 birds, with two adults, possibly females, with 16 fully-grown young on the 13 October 1991; some birds dived under the water while others flew on closer approach. Diving of young of this species can be fatal; all five small 8–10 day old young were devoured by piranha (*Serrasalmus* sp.) near Santarém, Pará (Gil Serique *in litt.*). Other family parties observed on the same day included 8 two-and-a-half week old young with 2 adults and another pair with 4 four to six day old young.

GREY-BELLIED HAWK *Accipiter poliogaster*

A sub-adult female was collected on 18 February 1992 (MPEG 48030) on the left bank of the Juruá at Porangaba. The bird was found roosting at 2000 h about 10 m up in a tree in *terra firme* forest. This strikingly different sub-adult plumage is not described in field guides or any other literature; distinct rufous neck and ear coverts of juvenile birds were lacking, being slate grey like the rest of the upperparts, with only a small trace of rufous on edge of ear coverts (only visible in the hand); underparts white, throat white with a few dark grey-black streaks, sides of upper breast and neck with drop like grey streaks, sides of breast and flanks lightly barred with broad brown and grey bars, rest of underparts white; upperparts, mantle and wings dark slate grey with buff edgings to the wing coverts. Soft part colours: eyes orange; cere and bill greenish/yellow with the culmen more yellowish; legs yellow. Photos by AW are deposited in the VIREO (Philadelphia Academy of Natural Sciences) slide library no. W17/4/014 to W17/4/017 (Plates 3 & 4).

This little-known accipiter is rare throughout its extensive range in South America. In Colombia the species is recorded as a possible austral migrant, from early March to early June (Hilty & Brown 1986). It is reported to be migratory and absent in southern South America during the austral winter (Wattel 1973). However, an immature

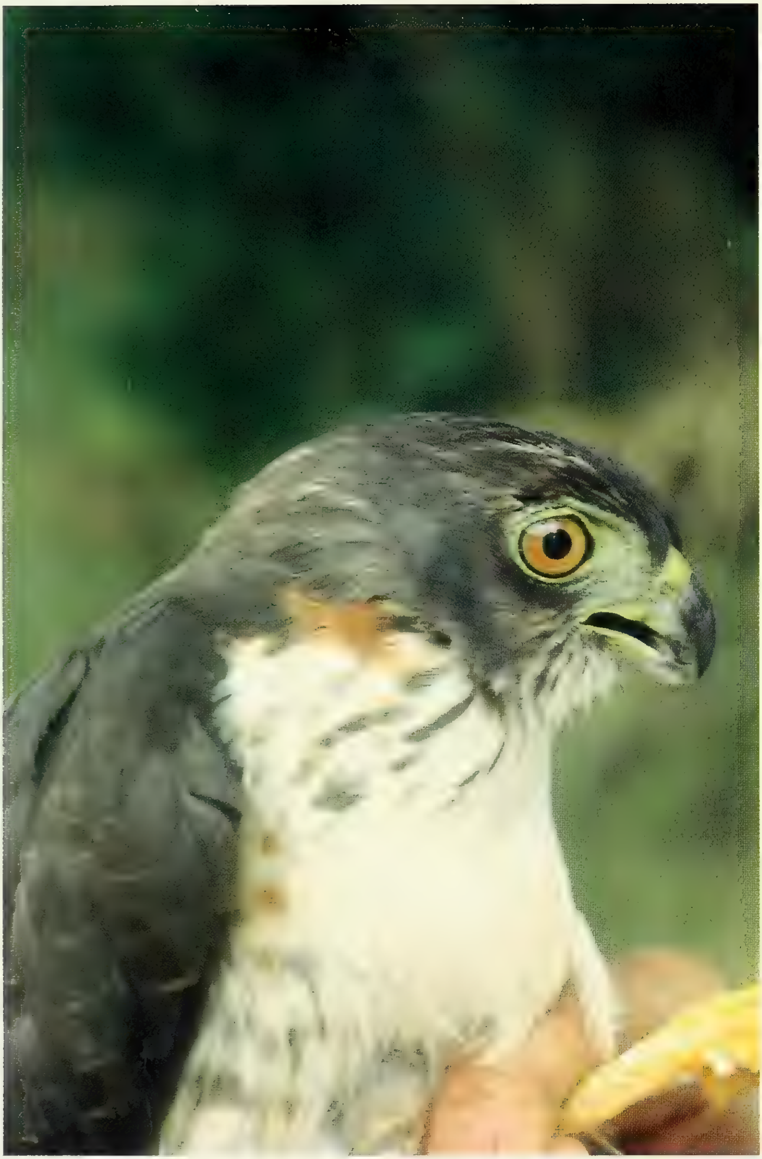


Plate 3. Head of Grey-bellied Hawk *Accipiter poligaster* (Acre, Brazil), showing an undescribed plumage of this sub-adult female. Note the greatly reduced amount of rufous remaining on this sub-adult plumage, which differs markedly from the extensive rufous nuchal collar, cheeks and side of chest on the immature plumage. Note soft parts, orange irides as in adult (immature having yellow), cere and bill dull greenish yellow, and culmen yellow.

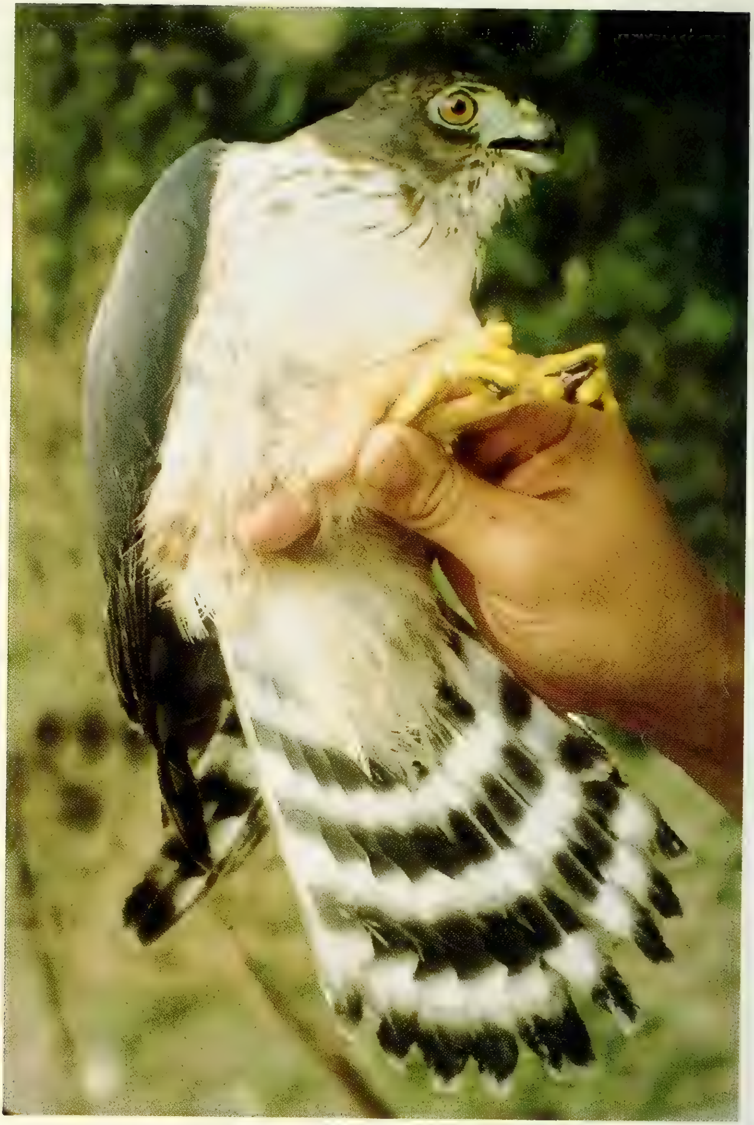


Plate 4. Ventral view of sub-adult female Grey-bellied Hawk *Accipiter poligaster* showing pure white underparts, grey-black streaking on the sides of the throat, drop-like grey streaks on the upper breast and neck, and side of breast and flanks lightly barred with broad brown and grey barring. Strikingly different from adult-plumaged birds, which have a pure grey belly, and from the distinct immature plumage which shows a striking resemblance to an adult Ornate Hawk-Eagle *Spizaetus ornatus*.

recorded in Manaus, Amazonas, Brazil on 13 January 1995 (AW and Kevin Zimmer) presumably involved an over-summering immature or a locally breeding bird. The species appears to be extremely rare in the Amazon basin with very few skins and reliable sight records. Our January and mid-February records are too early for an austral migrant. Further information on this species is required to resolve its status in Amazonia.

ZONE-TAILED HAWK *Buteo albonotatus*

An adult was recorded soaring over the Rio Juruá 5 km upriver from Cruzeiro do Sul on 12 November 1994. Later a pair was seen perched on riverside trees on the bank of the Rio Juruá about 5 km south of Porto Walter (8°15′S, 72°45′W). Our two records represent the only records from western Amazonian Brazil, although the species is found at several nearby Peruvian Amazon sites, including Tambopata (Parker *et al.* 1994).

PEREGRINE FALCON *Falco peregrinus*

Two records by AW. A large adult (probably female) some 5 km down the Rio Juruá from Eirunepé on the 11 October 1991 was perched on a dead snag at a river's edge. Again on the 13 October 1991 a probable female in the same plumage was observed some 175 km down river. These are the first records of this presumed boreal migrant in the Rio Juruá drainage.

CHESTNUT-HEADED CRAKE *Anurolimnas castaneiceps*

This rather elusive species was tape-recorded on 10 December 1995 at Tapuara on the left bank of the Rio Juruá in secondary growth adjacent to *terra firme* forest. Robert Ridgely later identified the tape-recorded vocalizations (in litt.). This is the second Brazilian record. The first was from Rondônia on the Rio Abunã on 11 November 1992 by T. A. Parker (Pacheco 1996). The species occurs in adjacent Peru and in Colombia.

PAINT-BILLED CRAKE *Neocrex erythrops.*

Two of these crakes were captured in small mammal traps on the Rio Juruá bank on 16 and 18 October 1991. Traps were set in long grass on the left bank at Barro Vermelho. Photographs of these birds are deposited in the VIREO collection, Philadelphia, USA. The range of this furtive species is incompletely known; the nearest records are from Tambopata in Peru (Parker *et al.* 1994).

LAUGHING GULL *Larus atricilla*

On 9 and 10 December 1994 an immature was observed by AW at Cruzeiro do Sul on the Rio Juruá. This represents only the second inland record for Amazonian Brazil. This species is normally a coastal migrant in South America; it is common along the coasts of Amapá and Pará during the boreal winter. The other Amazonian record for Brazil is from Manaus, Amazonas, on the Amazon in December 1987. Further inland Amazonian records are of a specimen collected by a

Louisiana State University expedition to Limoncocha in the Peruvian Amazon in December 1975, a sight record from the Ecuadorian Amazon (R. Williams, *in litt.* 1995), where a single bird was seen repeatedly from late December 1994 to January 1995 on the Rio Napo at Coca, as well as a few other recent sightings from the Rio Napo (R. Ridgely, pers.comm.).

BLUE-HEADED MACAW *Ara couloni*

This macaw, known from eastern Peru and adjacent northern Bolivia, was only recently recorded in Brazil at Brasiléia, Acre, in the Rio Purus drainage (Parker & Remsen 1987) and Plácido de Castro, Acre, in the Rio Madeira basin. Our new records for Brazil are one pair observed by AW at Porongaba on the Rio Juruá in February 1992; AW and DCO later found the species common in November 1994 farther up the Juruá basin on the Rio Tejo at Restauração. Our peak count here was 32, observed in small groups as they flew high over forest to a roosting area on 24 November 1994. During the same period it was uncommon along the Juruá at Boca do Tejo where the Chestnut-fronted Macaw *Ara severa* was by far the commonest macaw species. AW and DCO collected the first Brazilian specimen on 28 November 1994 at Restauração (MPEG 52019). The species was repeatedly recorded in flocks of 4–7 birds at Valparaíso in April–May 1996. Our series of records suggests that the species is reasonably common and widespread in western Acre along the upper Rio Juruá and its tributaries.

BLACK-CAPPED PARAKEET *Pyrrhura rupicola*

This species has been previously recorded only twice within Brazil, from Rio Branco, Acre (Sick 1985, Forrester 1993), where it was found to be common in 1989 (Forrester 1993). We found the species to be fairly common along the Rio Juruá at the mouth of the Rio Tejo on both banks in *terra firme*. AW tape-recorded birds but no voucher specimens were obtained. Flocks flew rapidly and noisily through the mid-storey in typical fashion for the genus, alighting to feed and then moving off noisily and abruptly. The Painted Parakeet *Pyrrhura picta roseifrons* was sympatric in the same habitat and much more common.

SCARLET-SHOULDERED PARROTLET *Touit huetii*

A group of 5–7 was found on 15 November 1994 in *várzea* forest at Boca do Tejo on the left bank of the Rio Juruá. They were located by their calls in a large leguminous tree where they were feeding on 6–8 cm fruit pods. The following morning at 0730 h they were heard arriving, calling noisily as they flew through the canopy in a tight group and alighting in the same tree. Once in the tree crown they remained very quiet, walking around within the tree on branches and climbing onto the outer branches, often using the beak as extra support. Easily overlooked because they tend to vocalise principally during their rapid flights, parrotlets of the genus *Touit* are the most poorly known group of all Amazonian psittacids.

On 3 December, 4–5 birds were still present feeding in the tree. They were tape-recorded and a single specimen was collected (MPEG 52022). These records are the first from Acre, although the species is recorded from nearby Tambopata, Peru and in Pando, northwestern Bolivia (Parker & Remsen 1987). There are few confirmed records from within Amazonian Brazil. The closest previous Brazilian record is from the Jaú National Park, Amazonas (AW pers. obs.), some 1,500 km east north-east.

BLACK-BILLED CUCKOO *Coccyzus erythrophthalmus*

One was observed by AW on 18 February 1992 at Porongaba, on the right bank of the Rio Juruá in secondary growth. The bird was in thick cover 5 m up on the edge of *terra firme* forest searching for prey, and behaving in the characteristic skulking manner of this genus. This was probably the same individual that was later collected within 150 m of the site on 28 February 1992 (MPEG 48047). This record represents the first record and specimen for Brazil and suggests that the individual was an over-wintering bird; if so this extends the species' known wintering range eastward. The Black-billed Cuckoo has been recorded wintering in northwestern Venezuela, Colombia, Ecuador and northern Peru, and as an accidental in northern Argentina and Trinidad (Meyer de Schauensee 1970). Recent accidentals have also been reported from Paraguay and from Bolivia at Cochabamba (Hilty & Brown 1986). All Ecuadorian records appear to involve transient birds (R. Ridgely, pers. comm.)

LONG-TAILED POTOO *Nyctibius aethereus longicaudatus*

Single birds were tape-recorded by AW on the nights of 20 and 21 October 1991 at Barro Vermelho, and at Porongaba on 13 January 1992. Both records were of birds in *terra firme* forest calling from the understorey and the midstorey, respectively. This nocturnal bird was little-known until its voice was learned by ornithologists in the last decade. Although many new records of the species have since come to light, it is still poorly represented in museums and certainly is more widespread in Amazonian Brazil than the few specimen records reflect. Disjunct *N. a. aethereus*, known from the Atlantic rainforests of south-eastern Brazil, is even less known and is significantly larger than the Amazonian form (M. Cohn-Haft, pers. comm.). This, combined with the geographical isolation of the two forms, suggests that the Amazonian taxon deserves full species status, as it was treated, in fact, in the past (Cory 1918).

CHIMNEY SWIFT *Chaetura pelagica*

A monospecific flock of *c.* 20 birds was observed by AW on 1 February 1992 at 1730 h below Porto Walter on the Rio Juruá. Birds were circling low over the river and skimming the surface to drink. The following day several km down river from Porto Walter two larger flocks of *c.* 50 and 200 were seen drinking. The larger flock included at least 2 Pale-rumped Swifts *Chaetura egregia*. The next day AW observed another flock of *c.* 70 15 km farther up river. On 6 December

1994 4 birds were seen by AW at Grajaú near Cruzeiro do Sul, as they circled 15–20 m over the river with a mixed species flock of swifts including Short-tailed Swift *Chaetura brachyura* and Fork-tailed Palm Swift *Tachornis squamata*.

Exceptionally good field conditions including perfect light, close low flying birds, repeated views and comparisons with other close *Chaetura* species allowed us confidence in our identification. AW noted the following field marks: pale, almost whitish, throat contrasting with a darker face and head; dark sooty brown upperparts with a suggestion of being slightly darker than the underparts; paler greyish rump extending onto the upper tail. Jiz: a very strong flight with powerful wing beats and no bulges shown in the secondaries that many other *Chaetura* show at times.

C. pelagica's wintering range is still poorly known, mostly due to difficulty in field identification. It apparently winters in western Amazonia (east to Manaus) and Chile (Arica); perhaps western Peru (Hilty & Brown 1986) and western Ecuador (R. Ridgely, pers. comm.). The purported first Brazilian record was from Manaus in late March when Gilliard (1944) observed what he believed was this species entering a chimney. This record seems unsatisfactory, however, and probably refers to another *Chaetura*, such as resident Chapman's Swift *C. chapmani* (AW pers. obs.) or the austral migrant Sick's Swift *C. "andrei" meridionalis* (see Marín 1997). Gilliard's record has already been noted as unsatisfactory (Stotz *et al.* 1992, Sick 1985). These new sight records are the first confirmed Brazilian records and indicate that it is a fairly common winter visitor in western Acre. This confirms Parker *et al.*'s (1992) suggestion that "a portion of the population, at least, winters in mostly western Amazonia."

WHITE-THROATED JACAMAR *Brachygalba albogularis*

This species was local and uncommon along the upper Rio Juruá in November and December 1994, with only two groups located during our census work. We first observed this jacamar along the Rio Tejo where a family party of 4 was perched in *Cecropia* trees along the river edge in secondary growth bordering *várzea* forest. The birds were perched between 7–15 m up sallying to catch insects. Their behaviour was much like the more widespread Brown Jacamar *Brachygalba lugubris*. Sallies of 2–30 m for insects were noted. The longer sallies often involved a swooping down off the perch and then flying fast on a horizontal plane and ending with a swoop up at the end to catch the insect prey. A pair was collected by AW on 19 November 1994 (MPEG 52054/55).

FULVOUS-CHINNED NUNLET *Nonnula sclateri*

The first record of this poorly known and rarely seen species was a lone bird observed by AW at Porongaba on 11 February 1992. The bird was tape-recorded while singing, perched motionless 5–6 m up in a vine tangle on the edge of a trail through disturbed *várzea* forest. The song was a series of equally spaced plaintive repetitive "weeip, weeip, weeip" up to 30 notes. The song is most similar to Rusty-breasted

Nunlet *N. rubecula*, though on average a longer series of individual notes than that species, each note being slightly longer and not emphatic. The bird was very confiding and allowed close approach. It moved its tail in 4–5 small jerks first to the right and then left as noted in other species of *Nonnula* and other *Malacoptila* puffbirds (Whittaker *et al.* 1995). The bird was loosely associated with a small mixed species understorey bird flock. Four birds were mist-netted and collected (MPEG 48125/26/27/34) by AW in disturbed *terra firme* understorey on 29 February 1992 at Porongaba. Soft parts: brown eye with a pink eye ring, pale brown legs, and maxilla black, mandible grey, total length 145–155 mm and masses 15–17 g. Also AW observed a lone bird at close range on 24 May 1995 on the upper Rio Tejo while it sat motionless, perched 3 m up on a ridge in *terra firme* dominated by bamboo. The close resemblance to *N. rubecula* is striking in the field; however, the best distinguishing features are as follows: rufous brown lores (white in *N. rubecula*), grey wash to cheeks, darker breast, and buffy wash to the lower belly. The fulvous chin is not a good field mark and is only noticeable under ideal close views (AW pers. obs.). Previously recorded from the Rio Juruá by Gyldenstolpe (1945), it is also known from Brazil from the Rio Purus (Todd 1943).

SCARLET-HEADED BARBET *Eubucco tucinkae*

AW observed a single male of this striking barbet on 22 November 1994, feeding in the top of a fruiting fig (*Ficus* sp.) along the left bank of the Rio Tejo, in the canopy of the *várzea* forest at the river edge. Parker *et al.* (1991) note that this species prefers floodplain forest within 150 m of the river. AW observed another adult male on 5 May 1995 at close range while feeding in a flowering *Inga* tree, apparently taking nectar at the flower bases, at Boca do São João on the upper Rio Juruá. DCO recorded two other individuals in *várzea* forest along the Igarapé São Luís in May 1996. These sight records constitute the first Brazilian records of an uncommon and little-known barbet, previously considered a Peruvian endemic (Parker *et al.* 1982). In 1990 this species was recorded from northwestern Bolivia (Parker *et al.* 1991) at Alto Madidi.

EMERALD TOUCANET *Aulacorhynchus prasinus*

One individual was observed at Porongaba on 27 February 1992 in *terra firme* forest as it flew into the canopy of a fruiting tree. During November 1994 several pairs were observed along the Rio Juruá and the Rio Tejo, where the species was relatively common. A specimen was collected on 4 December 1994 (MPEG 52064). This is the first Brazilian specimen and pertains to the distinctive black-throated subspecies *dimidiatus*. The first Brazilian record was a sight record at Plácido de Castro, Acre in 1989 (Forrester 1993). The subspecies is also known from adjacent lowlands of Amazonian Peru from Tambopata and Manu (Terborgh *et al.* 1984), and at Balta, La Pampa, Astillero, Marcapata, Collpa, and Hacienda Villa Carmen (O'Neill & Gardner 1974).

RUFOUS-HEADED WOODPECKER *Celeus spectabilis*

First located at Tartaruga (9°16′S, 72°16′S, 72°41′W) on the left bank of the Rio Juruá on 9 May 1995 in *terra firme* forest with large bamboo, where a calling male was tape-recorded and observed at close range after responding to tape playback. The bird pecked and drummed on the bamboo trunks from 8–12 m up. The plumage description fitted *C. s. exsul*, which is known from adjacent Peru. The following day, 4 km farther down the same trail, AW located a pair in bamboo understorey as they were pecking on dead bamboo trunks. The male was tape-recorded drumming on a hollow dead bamboo stump. The foraging birds preferred the almost horizontal bamboo stems from 3–10 m high. This same area of bamboo also had *Cercomacra manu*, *Abazenops dorsalis, Simoxenops ucayalae, Drymophila devillei*, and Ornate Antwren *Myrmotherula ornata*, all well known bamboo specialists, as well as Semi-collared Puffbird *Malacoptila semicincta*, found only within bamboo in this region, suggesting that this species also has affinity to bamboo at least in this region.

AW later recorded *C. spectabilis* from the Rio Tejo at Machadinho (9°25′S, 72°12′W) on 18 May 1995 in dying bamboo where one bird was heard tapping loudly on bamboo stems and briefly seen. Another two pairs were seen at Santo Antonio (9°11′S, 72°13′W) on 24 May 1995, again in bamboo. Farther down the Rio Juruá on the Rio Amônia at Quieto (9°00′S, 72°49′W), one male was seen twice on 26 May 1995 in secondary growth at 2–4 m boring holes in a live *Cecropia* trunk. We conclude that *C. spectablis* is fairly common in Acre and mostly associated with bamboo.

The first Brazilian record of *C. spectablis* is in fact a specimen attributed to this species collected in 1926 by E. Kaempfer from the state of Piauí, eastern Brazil. The specimen is an adult female collected on 16 August 1926 at Uruçuí on the Rio Parnaíba (7°14′S, 44°33′W), at an altitude of 124 m, original number 3707. The specimen is deposited in the American Museum of Natural History (New York City) as no. 242687, where it remained labelled as a *Celeus* sp. until its unusual plumage features were noted by Charles O'Brien. He informed L. L. Short that he thought that the specimen most closely resembled *C. spectablis*, but did not publish. After O'Brien retired, Short continued to investigate this puzzling *Celeus*, eventually describing it as a new sub-species; *C. spectablis obrieni* (Short 1973).

Celeus spectablis obrieni differs strikingly from both *C. s. spectablis* and *C. s. exsul*, not only in its plumage differences but also in its smaller size (wing, tail, bill and tarsus). Plumage differences described by Short (1973) are: "Greatly reduced barring dorsally (strongest and most prominent in nominate, also well marked on entire mantle in *exsul*.). Very reduced ventral markings (very heavily marked in nominate form, however significantly less in *exsul*), even less in *obrieni*. Whiter above and below; small outer rectrices mainly cinnamon (black in nominate and *exsul*); and secondaries paler, more buffy (less chestnut), especially on tertial feathers; the bill appears yellower (compared to both newer and older specimens)."

C. s. obrieni has not been seen in the wild since the holotype was collected. Recent ornithological work in Piauí in the region of Uruçuí close to the type locality at the Estação Ecológico de Uruçuí-una (8°37'S, 44°55'W) by F. C. Novaes during December 1980 (Novaes 1992) was unsuccessful in relocating the taxon. The specimen of *C. s. obrieni* is anomalous for the following reasons: 1-*C. s. obrieni* represents a range extension of about 3,150 km east of the species' known range. The other two subspecies of *C. spectablis* are found from eastern Ecuador, southwards just east of the Andes to Cochabamba, Bolivia (Meyer de Schauensee 1966) and, now, southwestern Brazilian Amazonia. 2-The area in northern Brazil where the holotype was collected is extremely arid. There the typical dominant habitat is dry cerrado intermixed with caatinga, a typically arid scrub with stunted, often thorny trees with many cacti and other succulents (Novaes 1992). Novaes noted smaller areas of low riverine scrub forest and swamp vegetation dominated by *Mauritia flexuosa*. Semi-deciduous forest may also occur along some water courses of the region.

Importantly, the type locality is found in the caatinga endemic centre of Northeastern Brazil (Cracraft 1985), with its many endemic species and subspecies. Even though many bamboo species with ranges in the western Amazon basin in Brazil, Peru, Ecuador and Bolivia have been recently recorded thousands of km farther east in the Brazilian Amazon at sites such as Alta Floresta, Mato Grosso and Carajás, Pará (Zimmer *et al*. 1997, Ridgely & Tudor 1994), none has been recorded east of the important zoogeographic barrier of the Rio Tocantins.

The significantly different morphological data, distinct plumage differences, disjunct range and completely different habitat requirements in different climatic zones convince us that *obrieni* should be considered a full species, distinct from *C. spectabilis*. We suggest the name of "Caatinga Woodpecker" for the separated taxon.

PERUVIAN RECURVEBILL *Simoxenops ucayalae*

This rare furnariid is a bamboo specialist and was encountered for the first time in Acre. Our records suggest that the species in the upper Juruá is a local and uncommon resident in *terra firme* forest with either scattered or large stands of bamboo. Records were from Boca do Tejo where an adult and juvenile were mist-netted and collected (MPEG 52095/96), and at Restauração on the upper Rio Tejo where one male and two females were collected (MPEG 52097/98/99). There are only three previous records from Brazil, mostly from skins in the MPEG collection. A specimen (MPEG 32018) reported by Novaes (1978a) is from an unknown site somewhere in either Amazonas or Pará. The second (MPEG 38156) is from the Serra de Carajás, Pará. Recently it has been recorded through sightings at Alta Floresta, Mato Grosso, where it is locally uncommon in bamboo in *terra firme* forest (Zimmer *et al*. 1997). It is also found in nearby south-eastern Peru at Tambopata (Parker *et al*. 1994) and at Manu National Park (Terborgh *et al*. 1984).

Another 2 pairs were observed by AW on 9 May 1995 at Tartaruga. One bird was observed foraging in bamboo at 3.5 m where it was pecking hard at the dead stem of a bamboo making a woodpecker-like loud tapping noise. After opening up the hole the bird put its beak in, pulled out fibres, then held its eye up close to the hole and peered in, looking first upwards and then down for prey items. Apparently unsuccessful, it then flew off out of sight.

DUSKY-CHEEKED FOLIAGE-GLEANER *Abazenops dorsalis*

A pair was seen and tape-recorded in thick bamboo in the understory of *terra firme* forest at Tartaruga on 9 May 1995 by AW. The pair was observed as they foraged along with a mixed-species understorey flock. The following day along the same trail another pair was located in the bamboo understorey. These sightings represent only the third record for this species in Brazil. It was first recorded from Alta Floresta, Mato Grosso (Zimmer *et al.* 1997) where it was fairly common. The second record was a pair tape-recorded and observed at close range after playback at Guajará Mirim, Rondônia in April 1995 (AW pers. obs.).

GREY-THROATED LEAFTOSSER *Sclerurus albigularis*

We recorded this leaftosser only once in Acre at Tartaruga on 9 May 1995 in the understorey of *terra firme* forest, where AW tape-recorded the vocalisation and then observed a single individual after playback. This is the fourth Brazilian record and represents a range extension of approximately 1,000 km to the west in Brazil. Stotz *et al.* (1997) reported the first Brazilian record of a Grey-throated Leaftosser from Cachoeira Nazaré, Rondônia (9°44′S, 61°53′W), collected on 7 November 1986. Two others were collected some 150 km to the south, south-west of Cachoeira Nazaré almost simultaneously by Museu Goeldi technicians in *terra firme forest* at km 87, BR-429, Linha 64, Alvorado do Oeste, Randônia (11°25′S, 62°25′W): MPEG 38745, male, 34 g, testes 2 × 3 mm, total length 180 mm, 21 November 1986; and MPEG 38746, male, 36 g, testes 5 × 3 mm, total length 180 mm, 18 November 1986.

BAMBOO ANTSHRIKE *Cymbilaimus sanctaemariae*

This bamboo specialist was recorded from two different locations along the Rio Juruá by AW at Arara (9°00′S, 72°45′W), and at Quieto on the Rio Amônia. Pairs were observed and tape-recorded always in bamboo-dominated understorey of *terra firme* forest as they followed mixed species understorey flocks. In response to playback a male raised its black crest feathers up almost vertically. Previously known from Brazil from eastern Acre in the Purus basin and Rondônia (Parker *et al.* 1997).

BLACK BUSHBIRD *Neoctantes niger*

A pair was mist-netted in thick heliconia-dominated *várzea* forest understorey at Barro Vermelho on the right bank of the Rio Juruá in the state of Amazonas in 15 October 1991. The pair was photographed and released; the photographs are deposited in VIREO W17/4/031-032. Another female was mist-netted and collected (MPEG 48203) at Sobral, left bank of the Rio Juruá on 19 March 1992, also in *várzea* forest understorey. A further pair was collected at Boca do Tejo on 17 and 18 November 1994 (MPEG 52121-22). The area was poorly drained with a substantial amount of standing water with small palms and vine tangles covering small shrubs and trees. The male responded to playback of its song by approaching very warily, skulking and perching often in the thickest vine tangles where he worked his way up, hitching through the tangle and always remaining very well hidden. While perched he held his body rather upright, like some obligate army ant followers such as *Gymnopithys* and *Pithys*, with tail held c. 20–30° below the body plane. Agitated by playback, the male flared out his normally concealed white interscapular patch and also showed a little white edging to its shoulder. Interestingly, other suitable habitat surveyed by playback of the species' song in several areas along the upper Rio Juruá and Rio Tejo was unsuccessful.

STRIATED ANTBIRD *Drymophila devillei*

This bamboo specialist was found entirely in that habitat and was much more common along the upper reaches of the Rio Juruá than in the middle course. AW recorded one bird on 16 December 1991 from *várzea* forest on the right bank of the Rio Juruá at Barro Vermelho in sparse bamboo. Voucher specimens and several tape recordings of birds were made along the upper Rio Juruá, Rio Tejo and Rio Amônia. This represents a range extension to the west in Brazil (see Parker *et al.* 1997), though it is common in nearby Tambopata, eastern Peru.

MANU ANTBIRD *Cercomacra manu*

A lone male bird was located by its croaking voice by AW as it foraged in a bamboo thicket in *terra firme* at Porongaba on 17 February 1992. During several minutes of observation the male was noted foraging within the bamboo from between 3–5 m, gleaning insects off both upper and lower leaf surfaces. AW collected the male on 22 February 1992 (MPEG 48238). It was also found at Tartaruga on the left bank of the Rio Juruá in bamboo-dominated *terra firme* understorey where AW found 4 pairs and tape-recorded several of them on 10 and 11 December. Another male was observed carrying a green 2 cm katydid to a possible nest or young. Along the Rio Amônia at Quieto, while searching bamboo along a 5 km trail, AW heard a further 3 pairs on 14 December 1995, again in bamboo-dominated *terra firme*, but this time higher upland forest rich in rubber trees. This recently described species (Fitzpatrick & Willard 1990) from southeastern Peru is a well known bamboo specialist (Kratter 1997). This is the first Brazilian specimen and the second country record. The species was first reported in Brazil (Zimmer *et al.* 1997) at Alta Floresta, Mato Grosso.

WHITE-LINED ANTBIRD *Percnostola lophotes*

A pair and a lone singing male were observed and tape-recorded by AW and DCO on 15 November 1994 in disturbed *várzea* forest at Boca do Tejo. One male was collected from the site on 20 November (MPEG 52153) by AW, who later collected another male from the same locality (preserved at MPEG as an anatomical specimen). Another individual male was tape-recorded by AW from a dense stand of bamboo 5 km up river of Restauração on the upper Rio Tejo on 28 November 1994. AW tape-recorded two additional singing males from the upper Rio Tejo at Machadinho on 24 May 1995 in dense bamboo and secondary growth on a forest boarder. These records represent the first for Brazil. The known range of *P. lophotes* now extends from southeastern Peru and adjacent Bolivia east into western Acre, Brazil.

GOELDI'S ANTBIRD *Myrmeciza goeldii*

Although heard more often than seen, the species was found to be locally uncommon in the upper Rio Juruá. It was known before only from extreme upper Rio Purus drainage in Brazil (Ridgely & Tudor 1994). AW tape-recorded several pairs and collected one male on 28 November 1994 (MPEG 52155). We found *M. goeldii* to inhabit both *várzea* and transitional forest, often associated with bamboo or thick secondary growth close to waterways. On two occasions AW observed birds attending army ant swarms with other antbird species. AW observed an adult male carrying nesting material at Caipora on 11 December 1995. R. Ridgely (in litt.) found two nests in southeastern Peru in August 1996. The nests were cup-shaped and well-hidden on or near the ground in dense vegetation overhanging trails and each contained two eggs.

RUFOUS-FRONTED ANTTHRUSH *Formicarius rufifrons*

This rare formicariid was described in 1957 from southeastern Peru. For a long time it was only known from the Type, a female collected in 1954 on the Rio Colorado (Blake 1957). The species was rediscovered in September 1982 along the Rio Manu (Parker 1983). The species is listed as "threatened" in Collar *et al.* (1992).

AW heard an individual singing from a thickly overgrown orchard just after dawn on 11 December 1995 at the small settlement of Caipora on the right bank of the Juruá. He tape-recorded the bird and later observed it at very close range for an extended period. The bird walked on the ground with the characteristic rail-like gait of all *Formicarius* antthrushes, its tail cocked up. The orchard contained citrus and guava trees, and had many thick vines. The area was set back on the river floodplain some 75 m from the bank. Nearby in transitional forest and secondary growth, a Black-faced Antthrush *Formicarius analis* was heard singing. *F. rufifrons* scraped the ground with its feet in leaf litter while foraging. During song bouts the bird stopped walking and stood still while holding its head up at a 30° angle and vibrating its tail as it emitted the notes. A single Amazonian Antpitta (*Hylopezus berlepschi*: common in the area) was the only other terrestrial antbird sharing the bird's territory; it sang most of the morning from the same site.

This represents the first record for Brazil. It has recently been recorded in Bolivia (*fide* Sjoerd Maijor) and was tape-recorded by Lois Jammes (in litt.) on 10 September 1996 in *várzea* near the Rio Tahuamanu, Pando. These recent range extensions are encouraging for the species' conservation status.

ELUSIVE ANTPITTA *Grallaria eludens*

AW tape-recorded an Elusive Antpitta on 9 and 10 May at Tartaruga in thick upland *terra firme* forest undergrowth. Although repeated attempts were made to see the bird (5 hours of observation) it was never seen. The bird sang from dense bamboo-dominated understorey where there were several overgrown tree falls along a stream. The recordings were compared with a recording of *G. eludens* taken by T. Meyer at Abujao, Ucayali, Peru, and one of the Ochre-striped Antpitta *G. dignissima* by R. Behrstock at La Selva Lodge, Napo, Ecuador (Fig. 2). The voices are very similar, but *G. eludens* has a longer introductory note and the second note begins with an abrupt rise.

This record represents the second for Brazil. The first was at Benjamin Constant, Amazonas, Brazil (Willis 1987). This record was later doubted and rejected due to voice similarities and geographic considerations and proposed to refer to *G. digissima* (Sick 1997). The record should be accepted, however, since *G. eludens* was observed and tape-recorded in the Benjamin Constant area in 1997 by Mario Cohn-Haft (pers. com.) and AW in upland *terra firme* forest.

CHESTNUT-BELTED GNATEATER *Conopophaga aurita*

Our two records are of females, the first seen by AW at Barro Vermelho on 15 October 1991 in *terra firme* understorey. The second female was mist-netted at Porongaba (MPEG 49695) on 15 February 1992 in *várzea* forest understorey on the left bank of the Juruá. The exact contact zone of this species and Ash-throated Gnateaters *Conopophaga peruviana* along the Rio Juruá is not known. AW observed and tape-recorded a pair of Ash-throated Gnateaters on the upper Rio Juruá on 12 December 1995 at Largo Ceará (9°14′S, 72°43′W) and two immature males were collected at Seringal Oriente in 1956 (Novaes 1957).

WHITE-BROWED PURPLETUFT *Iodopleura isabellae*

AW saw this small cotinga once on the Rio Bajé in May 1995, in a group of three, which were tape-recorded. DCO observed another trio in high forest at the edge of a clearing at Valparaíso in May 1996. These are the first records in the Rio Juruá basin for this species, which is apparently rare and local in the region.

BLACK-FACED COTINGA *Conioptilon mcilhennyi*

This monotypic genus of continga, described from southeastern Peru (Lowery & O'Neill 1966) was first recorded by AW on 24 November 1994 at Restauração, upper Rio Tejo, when two birds were tape-recorded by AW in the canopy of *terra firme* forest on the right bank of the Rio Tejo. The voice sounds initially like the warming-up call of the Screaming Piha *Lipaugus vociferans* which then continues into sounds similar to the first notes of the call of the Smooth-billed Ani *Crotophaga ani*. AW collected a male at same locality on 27 November (MPEG 52215, 91 g). It was reasonably common along both banks of the Tejo and also at Boca do Tejo, right bank of the Rio Juruá. At Valparaíso on the Igarapé São Luís the species was relatively

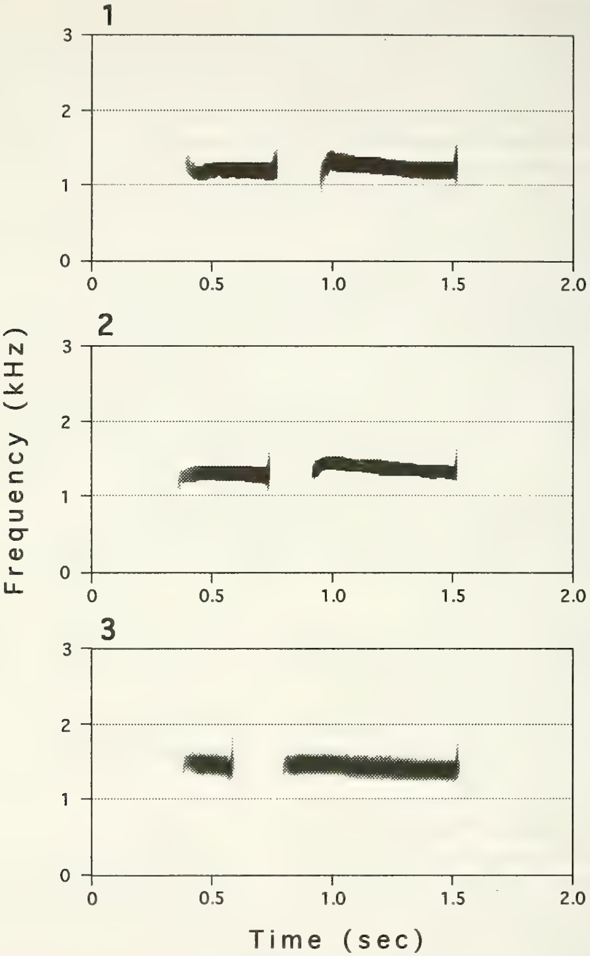


Figure 2. Sonograms of *Grallaria eludens* and *G. dignissima*. 1=*G. eludens*, Tartaruga, Rio Juruá, Acre, Brazil, A. Whittaker recordist. 2=*G. eludens*, Abujao, Ucayali, Peru, T. Meyer recordist. 3=*G. dignissima*, La Selva Lodge, Napo, Ecuador, R. Behrstock recordist.

common along the stream and in *terra firme* forest at the edge of clearings. Two individuals were collected on 6 May 1996: MPEG 52585, male, 89 g, gonads 4.7 × 2.5 mm; MPEG 53586, female, 81 g, ovary granulated, oviduct 3.1 mm, largest ovule 2.1 mm. The gonad measurements and behaviour recorded suggest that May marks the end of the reproductive period for this species in the Juruá basin.

These represent the first records for Brazil of a species thought to be a Peruvian endemic (though Ridgely & Tudor (1994) suggested that it was likely to occur in adjacent western Brazil and northwestern Bolivia).

Although Ridgely & Tudor (1994) indicate that this is a species of floodplain forest in Peru, we recorded it also well away from the rivers' floodplains, once 4 km away in upland *terra firme* forest.

PURPLE-THROATED FRUITCROW *Querula purpurata*

This species was seen and tape-recorded at Barro Vermelho during October 1991 and was seen or heard daily in *terra firme* forest. On the upper stretches of the Rio Juruá it was uncommon. A single voucher specimen was collected (MPEG 52217, female) at the mouth of the Rio Tejo on 3 December 1994. These are the first records for the Rio Juruá basin (Snow 1982).

BARE-NECKED FRUITCROW *Gymnoderus foetidus*

This species was common around Barro Vermelho in the expansive *várzea* forest and uncommon along the whole of the upper Rio Juruá. Birds were most often observed flying high over the river or feeding at fruiting trees, especially in *Cecropia* trees feeding on the catkins, often along with other frugivores. There are no other previous reports for this species from the upper Juruá drainage (Snow 1982).

ROUND-TAILED MANAKIN *Pipra chloromeros*

An active lek of 3–4 males was observed and tape-recorded by AW on 10 December 1995 in *terra firme* forest understorey at Tapuara (9°16′S, 72°42′W), on the left bank of the Rio Juruá. They displayed actively, and sang and chased one another 10–15 m up in the lower midstorey. Brief observations of the birds showed them holding the bright scarlet hind crown feathers out horizontally, exposing the olive-yellow base of the nape feathers. The 3–4 adult males also made short dance displays, fanning out their rounded tails and revealing their yellow thighs.

On 12 December 1995 in *terra firme* understorey at Largo Ceará on the left bank of the Rio Juruá, AW recorded another active lek and tape-recorded them. This lek contained at least three adult male birds. These are the first Brazilian records for the species, which is known from nearby eastern Peru.

STRIPED MANAKIN *Machaeropterus regulus*

This species was common and sympatric with Fiery-capped Manakin *Machaeropterus pyrocephalus* at Barro Vermelho. Here, several individuals of both species were captured, often in the same mist net in disturbed *terra firme* forest edge. Unlike *M. pyrocephalus, M. regulus* was not closely associated with bamboo in the understorey. Smaller numbers of *M. regulus* were found further up the Rio Juruá near the headwaters in *terra firme*. DCO collected both species at Valparaíso on the Igarapé São Luís in May 1996. AW observed lekking males calling from horizontal perches in the understorey from 2.5–6 m. Males often changed singing perches, which were often within ear shot of 2–3 other lekking males. The call is a soft but quick two note insect-like "whoo-cheet," which can be very easy to overlook and its ventriloquil quality makes it very hard to locate singing birds. The voice of the nominate race of *M. regulus*, endemic to Atlantic rainforest of southeastern Brazil (Bahia south to Rio de Janeiro), is strikingly different. The song from lekking males is a shorter, very fast metallic buzzing which is repeated more quickly than *M. r. striolatus* of Amazonia. The vocal differences between these two forms, combined with their wide geographical separation, the slightly larger size of the nominate birds, as well as significant plumage differences, strongly suggest that the Amazonian populations represent a separate species.

SULPHUR-BELLIED TYRANT-MANAKIN *Neopelma sulphureiventer*

This poorly known species was recorded by AW from disturbed *várzea* forest on 11 December 1995 at Caipora, on the right bank of the Rio Juruá. The birds were in the edge of an overgrown orchard bordering transitional forest, in an area of sandy soil situated about 100 m from the bank of the Rio Juruá. A lone male was observed and tape-recorded as he called motionless from 2 separate perches (1.5 m and 3.5 m up) some 6 m apart in fairly open, disturbed understorey. After playback the bird raised its crown feathers and exposed its spectacular (normally concealed) sulphur yellow crown. The singing bird had a pale iris washed with buff rust colour. Another adult, observed within 50 m of the singing bird, was observed feeding a dark-eyed bird with distinctly paler head, presumably a juvenile. The scarce data on the behaviour of this bird are summarised by Remsen *et al.* (1988).

LONG-CRESTED PYGMY-TYRANT *Lophotriccus eulophotes*

This poorly-known bamboo specialist was tape-recorded and seen by AW at Porongaba on 14 February 1992 in an area of bamboo in *terra firme*. This bird was very difficult to observe, feeding from 4–8 m up in thick cover. Later, a male was mist-netted and collected (MPEG 48400). On 17 November 1994 AW tape-recorded a minimum of 4 singing birds holding territory along a 300 m path through extensive bamboo in *terra firme* forest near Boca do Tejo. Birds were observed perched at 8–15 m, often motionless for long periods, before flying up to undersides of leaves and sally-gleaning insects. Interestingly, *L. eulophotes* is the only Amazonian bamboo specialist noted to be rare (Parker *et al.* 1982, Pierpont & Fitzpatrick 1983). However, it was common at Quieto on the Rio Amônia along a 5 km rubber tapper's trail through upland forest with extensive bamboo (*c.* 20 pairs were recorded). Here it actually outnumbered the usually more numerous Flammulated Bamboo-Tyrant *Hermitriccus flammulatus*. While searching for the possible occurrence of White-cheeked Tody-tyrant *Poecilotriccus albifacies* (without success), AW noted that *L. eulophotes* often responded to the latter species' call. *Lophotriccus eulophotes* was previously recorded in Brazil only from the left bank of the Rio Purus at Huitanaã, in the state of Amazonas (Ridgely & Tudor 1994).

ALDER FLYCATCHER *Empidonax alnorum*

A single bird was observed by AW at Boca do Tejo on the left bank of the Rio Juruá on 20 November 1995. It foraged 5–10 m up in secondary growth of transitional várzea forest and vocalised "fee-bee-o." This boreal migrant has only been recorded twice in Brazil. The first record is a specimen collected at Santarém on the lower Rio Tapajós on 24 February 1978 (Sick 1985). The species was also seen in Manaus on 15 December 1984 (Stotz *et al.* 1992). These authors state that it is common in secondary growth in lowlands of eastern Peru and suggest that it is probably regular through most of western Amazonia. Recently, Mario Con-Haft recorded it as fairly common and collected a specimen at Benjamin Constant, Amazonas, April 1997 (pers. comm.).

DUSKY-TAILED FLATBILL *Ramphotrigon fuscicauda*

Two singing birds were tape-recorded on 26 May 1995 at Alegria (8°57′S, 72°25′W) on the Rio Tejo within transitional forest. The understorey contained only small amounts of bamboo. The birds, *c.* 50 m apart, were observed 2–7 m up singing in vine tangles in the dense understorey. Later the same day at Quieto on the Rio Amônia AW located at least 6 singing birds, 5 along a 500 m trail in *terra firme* forest with thick bamboo understorey.

This is only the third locality for this species in Brazil, it being known previously only from Alta Floresta, Mato Grosso (Zimmer *et al.* 1997), and Carajás, Pará (DCO pers. obs.).

THREE-STRIPED FLYCATCHER *Conopias trivirgata*

AW first recorded this species in *várzea* forest at Cachoeira do Rio Bajé (8°55′S, 72°22′W) on 14 May 1995, where birds were heard and their characteristic flock rallying calls were tape-recorded. AW and DCO observed another pair on the left bank of the Rio Juruá at Tapuara on 10 December 1995, in the edge of secondary forest with a small mixed species flock of birds. These two records represent a range extension east from the nearest known locality at Tambopata, Peru (Parker *et al.* 1994). It was also recorded at the mouth of the Rio Juruá in Brazil where observed and tape-recorded by AW (pers. obs.) in March 1993. The few records from south of the Amazon for both this and the next species probably underestimate their ranges, especially in Brazil. They, as many other canopy species, tend to be overlooked by even experienced observers if their vocalisations are unfamiliar (Whittaker 1998).

YELLOW-THROATED FLYCATCHER *Canopias parva*

AW tape-recorded birds at Paraíso Dois (9°14′S, 72°15′W) on 20 May 1995 in a mixed species canopy flock in *terra firme* forest. This record represents a 1,200 km range extension in Brazil from the Urucu (Peres & Whittaker 1991). Peru has only two records, both from northern Loreto.

SULPHUR-BELLIED FLYCATCHER *Myiodynastes luteiventris*

A single bird tape-recorded by AW on 7 February 1992 at Porongaba, on the right bank of the Juruá, was the first Brazilian record (Ridgely and Tudor 1994). During the 1994 survey a lone bird was seen on 22 November by AW along the Rio Tejo, perched 8 m up on a dead tree on the river bank sallying after insects. Closer observations confirmed that the bird was feeding, along with 4 Eastern Kingbirds *Tyrannus tyrannus*, on a hatch of either winged ants or termites.

EASTERN KINGBIRD *Tyrannus tyrannus*

We found this species to be very common in February 1992, with the largest count 200+ on 1 February 1992 (AW and C. Peres). This involved birds coming in to roost 10 km down river from Porto Walter, in thick secondary growth bordered by pasture on the river bank of the Juruá. The large concentration of birds attracted a Bat Falcon *Falco rufigularis* which hunted them. AW and CP observed several other flocks during February 1992. Other significant numbers were 50+ birds at a roost on 23 February, 30 km upstream from Cruzeiro do Sul. During November 1994 AW and DCO recorded peak counts of 150+ and 120 along the Rio Tejo. Stotz *et al.* (1992) report that the species is common on wintering grounds in the lowlands of eastern Peru and northern and eastern Bolivia. Brazil has few published records and, surprisingly, still no specimen record. These observations confirm that the species is a common winter visitor to western Brazil in western Acre.

BLUE-AND-WHITE SWALLOW *Notiochelidon cyanoleuca*

Both records involved birds foraging for insects low over the Rio Juruá. AW first observed an adult on 12 November 1994 near Moura upriver from Cruzeiro do Sul and later a dull immature at Rio Caipora on 7 May 1995. Both birds were associated with small mixed swallow feeding flocks flying low over the water, including both boreal migrant Sand Martins *Riparia riparia* and Barn Swallows *Hirundo rustica*, as well as resident White-winged Swallow *Tachycineta albiventer*. Few records of this species are known from Amazonia (Oren & Parker 1997).

CLIFF SWALLOW *Petrochelidon pyrrhonota*

Our only record was a party of 6 birds observed by AW along the Rio Juruá half way between Itamarati and Eirunepé, Amazonas on 14 October 1991. Birds were associating with a mixed feeding flock of swallows, including both *Hirundo rustica* and *Riparia riparia*, as they flew low over the river surface. This record most certainly refers to transient birds on the way to wintering grounds of *P. pyrrhonota* further south in southern Brazil, Paraguay and Argentina. There are few Amazonian records for this species, with the nearest two Brazilian records both from near Manaus, Amazonas; a pair in October and the second a returning spring pair in April (Stotz *et al.* 1992), although there are numerous records from eastern Peru and eastern Ecuador (R. Ridgely, pers. comm.).

YELLOW-GREEN VIREO *Vireo flavoviridis*

Two to three birds were watched closely by AW as they foraged in secondary growth on the forest border on 9 December 1995 at São João. They foraged silently in typical vireo manner from 3–11 m up. The following day 1–2 birds were again observed along the same forest edge. AW observed a further 4 birds in secondary growth bordering *terra firme* forest at Quieto on 14 December 1995. These reports represent the first records for the country and suggest at certain times of the year that the species is fairly common in western Amazonian Brazil. In view of *V. flavoviridis*'s similarity to the resident Red-eyed Vireo *Vireo olivaceus chivi*, it may have been overlooked. Ridgely & Tudor (1989) suggest the winter range probably also extends to western Amazonian Brazil, but that it was as yet unrecorded.

MASKED YELLOWTHROAT *Geothlypis aequinoctialis*

The only record of this widespread species was on the bank of the Juruá near Barro Vermalha, where AW observed a female on 21 October 1991. The closest record to the east is from Rio Branco, Acre (Forrester 1993), 560 km away. AW collected a female in September 1992 very close to the mouth of the Rio Juruá on a river island in the Rio Solimões at Caïtaú-uará, 03°29′S, 66°04′W (MPEG 51790). Recent records from Mamirauá (Pacheco 1995) indicate that the species is more widespread in western Amazonia than once thought (Ridgely & Tudor 1994).

SCARLET TANAGER *Piranga olivacea*

AW observed a single adult male in full nuptial plumage on 1 February 1992, along the right bank of the Juruá some 20 km below Porto Walter. The bird was foraging in the upper midstorey of *várzea* forest along the river bank. AW further recorded 2 birds in female plumage along the Rio Tejo below Restauração on 23 November 1994. A single male in mostly its female-like winter plumage was repeatedly seen in a fruiting tree at Restauração from 25 November onwards. This male was collected by AW on 1 December 1994 (MPEG 52253) and represents the first Brazilian specimen. There are only two previous Brazilian sight records, both from the outskirts of Manaus, Amazonas (Stotz *et al.* 1992). The wintering range of this species in Amazonian lowlands is unclear (Isler & Isler 1987). Stotz *et al.* (1992) suggest that the Scarlet Tanager reaches its greatest wintering abundance in adjacent south-eastern Peru, although it is also common throughout the boreal winter in eastern Ecuador (R. Ridgely, in litt.). These records suggest that it is a regular winter visitor to western Acre and irregularly ventures farther east as far as Manaus, central Amazonian Brazil.

BLACK-AND-WHITE TANAGER *Conothraupis speculigera*

DCO recorded this species singing in second growth at Valparaíso throughout the study period in April and May 1996. A sub-adult male, with mostly mature plumage but a few greenish juvenal feathers on the mantle and breast, was collected on 6 May: MPEG 52679, 24.2 g, gonads 2.9 × 1.4 mm. This is the second Brazilian specimen. The species was only recently confirmed for Brazil by Stotz (1990), based on a female collected on the Juruá in August 1956 and deposited in the Museu de Zoologia da Universidade de São Paulo, Brazil. This species apparently breeds in eastern Ecuador and northwestern Peru in Feb–May, then departs to western Amazonia. This record and other recent ones support this migratory pattern consistently (R. Ridgely, in litt.).

RED-BILLED PIED TANAGER *Lamprospiza melanoleuca*

A flock of three birds was heard and tape-recorded by AW on 28 October 1991 at Barro Vermelha, Amazonas from *terra firme* forest. Later, three birds were observed by AW feeding on the fruits of a single large *Cecropia* tree. A small group was tape-recorded by AW on 4 December 1994 at the Boca do Tejo, left bank of the Juruá. *L. melanoleuca*'s known distribution in western Amazonia excludes the Brazilian portion (Isler & Isler 1987) and Ridgely & Tudor (1989:337) state "it has not yet been recorded south of the Amazon in western Amazonia [in Brazil] but probably occurs". Records from the Urucu, Amazonas (Peres & Whittaker 1991) and our records from both near Eirunepé and along the Rio Tejo confirm that it does occur in this region. However, it seems to be uncommon to rare in most of southwestern Amazonian Brazil.

BAND-TAILED OROPENDOLA *Ocyalus latirostris*

This poorly known species with a restricted range was encountered repeatedly by AW in *terra firme* forest along the Juruá. The birds were usually in mixed-species flocks with other icterids, but were twice encountered in monospecific flocks of 3 and 8 birds. The mixed species flocks varied from 20 to 150 birds, with the largest number of *O. latirostris* being c. 50. The Russet-backed Oropendola (*Psarocolius angustifrons*) was the most common associate with *O. latirostris*, followed by Yellow-rumped Cacique (*Cacicus cela*), and only one record with Velvet-fronted Grackles (*Lamprospsar tanagrinus*). Band-tailed Oropendolas were mostly in mid-storey and subcanopy *várzea* forest, and less commonly in *terra firme* forest.

On 16 September 1994 AW located an active nest in a live *Cecropia* tree near the mouth of the Rio Tejo. The nesting tree was approx. 20 m tall in a natural clearing beside a small stream in transitional *terra firme* forest approx. 1.5 km from the river. The same tree contained an active colony of 14 Casqued Oropendola nests. The *O. latirostris* nest was the highest in the tree (17 m up), approximately 1 m from the end of a branch sloping at 60°. The nest was sack-shaped with a top entrance, constructed of woven fibres and possibly grass stems. There were two Casqued Oropendola nests within 3 m. The adult *O. latirostris* arrived silently to feed the young, which chirped excitedly at the arrival of the parents. The only other published information on nesting in this species is by Koepcke (1972).

CASQUED OROPENDOLA *Psarocolius oseryi*

Two were observed by AW at Barro Vermelho, Amazonas, on the left bank of the Rio Juruá on 22 October 1991. The birds were in *terra* *firme* forest where they were seen flying into a *Coussopia* tree with ripe fruit and many other frugivorous bird species. The oropendolas were observed for several minutes as they fed on the fruits before they flew off. Later an active nesting colony was located by AW near the mouth of the Rio Tejo on 16 September 1994. The colony was in *terra firme* forest and had 14 nests under construction in a *Cecropia* tree. Birds were tape-recorded and a single female collected (MPEG 52244). Several other foraging flocks were observed by AW and DCO along the Rio Tejo around Restauração. On 23 November 1994 AW watched a female feeding a recently fledged young which had not yet got a full tail. DCO observed a single bird flying in *várzea* forest near the mouth of the Igarapé São Luís on 13 May 1996.

This species occurs from eastern Ecuador and eastern Peru (Loreto south to Puno), and Ridgely & Tudor (1989) suggest that it should also occur in adjacent western Brazil. These records are the first for Brazil and represent a range extension of some 750 km east into Amazonas and Acre, Brazil.

SLATE-COLOURED SEEDEATER *Sporophila schistacea*

AW tape-recorded several singing males in disturbed *várzea* forest on 30 January 1992 on the outskirts of Cruzeiro do Sul, Acre. All birds seen were in immature male plumage, like the female but with small but obvious white wing speculums. Three singing birds were located next to a forest clearing with tall bamboo clumps. Birds were singing from 7–15 m high and often difficult to locate. These records represent a range extension of about 500 km NNE from the nearest records from Huánuco and Madre de Dios, eastern Peru (Ridgely & Tudor 1989). These are the first records in western Amazonian Brazil. The only other published Amazonian records are from eastern Amazonia in Pará and Amapá (Snethlage 1914, Novaes 1978b). AW also observed and tape-recorded males from Rondônia, both an adult male from Ariquemes in January 1995 and 3 adult males near Guajará Mirim in April 1995. With increasing deforestation encouraging the spread of bamboo, this species may extend its range progressively through the rest of Amazonia.

BLACK-AND-WHITE SEEDEATER *Sporophila luctuosa*

On 21 January 1992 a mixed flock of 20–25 seedeaters was observed on the margins of the Rio Juruá, c. 20 km up river from Cruzeiro do Sul by AW and CP. The flock contained both *S. luctuosa* and Lesson's Seedeater *S. bouvronides*. We estimated that a little less than half this mixed flock was *S. luctuosa*, with over 50% in adult male plumage. The flock was feeding on the ripe seed heads of grasses and sedges that were abundant along the river bank. During the next few days travelling up the Juruá we noted the following additional observations: one pair on the morning of 2 February 1992; later in the afternoon another male observed singing; on 11–12 February 1992 AW found and tape-recorded a small flock around a little settlement a few km upriver from Porongaba, in an extensive area of pasture with seeding grass and low bushes adjacent to the river; on 11 February at least two male birds and one bird in female plumage mixed in with a small flock of Chestnut-bellied Seedeaters *S. castaneiventris*. The following day there were at least eight males mostly not in full adult male plumage with mottled areas of brown visible in their black plumage and one bird in female plumage. Three males were collected during these two days (MPEG 48471–73).

Another male was observed at Largo Ceará by AW on 10 December 1995 along the banks of the Rio Juruá. It was associating with a feeding flock of 3–4 female *Sporophila*s, probably Double-collared Seedeaters *S. caerulescens*.

These records are the first for Brazil. The species' range is western Venezuela, Colombia, Ecuador, Peru and northern Bolivia, "mostly between 1,200–2,500 m, occasionally lower (to 1–300 m); perhaps engages in seasonal altitudinal movements" (Ridgely & Tudor 1989). Our records reinforce the hypothesis of altitudinal and geographical migration.

Recent unpublished reports from lowland areas in adjacent Peru at Tambopata and Madre de Dios record the species as a seasonal migrant from Aug–Nov, some years being more common than others (Barry Walker, pers. comm.).

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The birds of Sapwuahfik Atoll, with first record of the Grey Wagtail, *Motacilla cinerea*, from the Federated States of Micronesia

by Donald W. Buden

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Sapwuahfik (formerly Ngatik) Atoll is one of many remote, seldom visited, and biologically poorly known groups of islands in the tropical Pacific; its biota have never been surveyed systematically. The present study provides information on the occurrence and distribution of bird species on Sapwuahfik, and is based largely on my observations during 28 May–1 July 1998.

Sapwuahfik Atoll is a part of the Federated States of Micronesia, which includes the main islands of Yap, Chuuk [formerly Truk], Pohnpei, and Kosrae, and their many outliers. The name Ngatik was used for the atoll prior to 1985, and is still used for the largest and only permanently settled island. The atoll is about 160 km southeast of Pohnpei, the nearest island and the administrative seat. It is about 21.0 km long and up to 9.5 km wide (Fig. 1). Its ten, low, coralline islands have a total land area of about 1.6 km^2. A deep water channel on the southern side provides the only passage for boats into and

Figure A. Shelter on the lagoon-side beach of Jirup Island, Sapwuahfik Atoll.

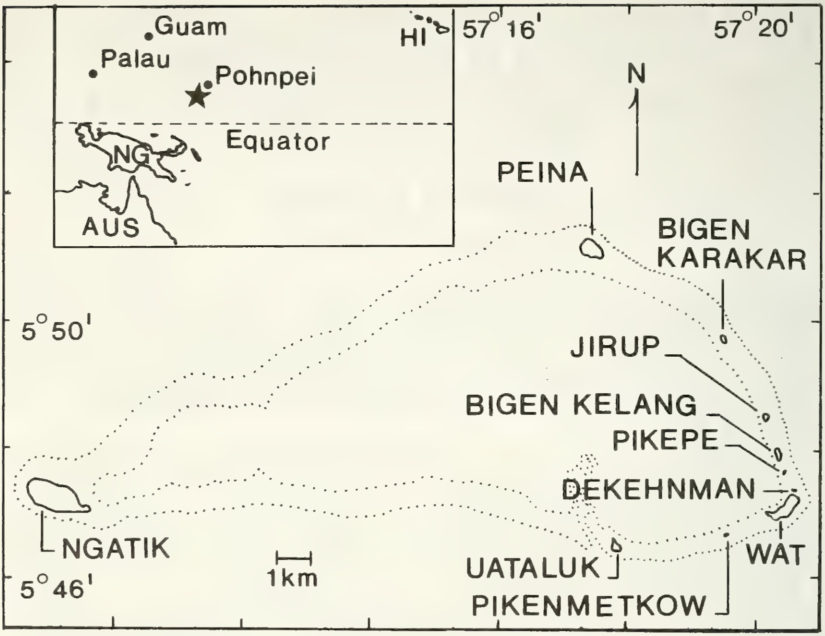

Figure 1. Location map for Sapwuahfik Atoll.

out of the lagoon; inter-island passages are shallow and easily waded at low tide, usually being less than 1.0 m deep. The 1994 FSM national census recorded 603 resident islanders (Office of Planning & Statistics 1996), all domiciled on Ngatik, at the extreme western end of the atoll. The nine other islands are distributed along the eastern perimeter and are uninhabited or inhabited only intermittently and for short periods by visitors from Ngatik. No more than 12 people were living on these eastern islands at any time during my visit.

The vegetation on the atoll consists largely of *Cocos* (coconut) forest, which abuts sandy beach on the lagoon side and rocky beach on the ocean side or is bordered by a discontinuous band of coastal thicket several metres wide and consisting largely of *Tournefortia* and *Scaevola*. The understorey consists of young palms, *Pandanus* trees, and broad leaf trees and shrubs, with a ground cover of mosses, ferns, grasses, sedges, and other herbs. In the central part of the largest islands, taro (*Cyrtosperma*) is cultivated in excavated pits, and breadfruit trees (*Artocarpus altilis*) are co-dominant with *Cocos*. The physiognomy of the different islands varies in large measure according to the degree and recency of human activity (cutting, burning, planting, Fig. A), and the rooting of pigs. Rainfall averages about 406 cm/year (Anthony 1996), but effects of the 1997/1998 El Niño-induced drought were evident in the many dead and withered epiphytes, especially along the windward shores.

Methods

Nomenclature follows Pratt *et al.* (1987), except that the Pacific Golden Plover (*Pluvialis fulva*) is treated as a species distinct from the American Golden Plover (*P. dominica*). The terms of abundance are: very common (30 or more sightings/day), common (15–30/day), fairly common (5–15/day), uncommon (up to 10/day on most days), scarce (up to 5/day, but may be unrecorded on more than half the days). Resident species are defined as those that occur year-round and breeding is documented by personal observations or by corrobarating reports by local islanders. Nonbreeding visitors include vagrants or accidentals, as well as passage migrants and off-season visitors. The overall status of bird populations on Sapwuahfik is based on my observations during summer 1998 together with anecdotal information provided by resident islanders and inferences from the status of populations on surrounding islands, relying largely on personal observations and Pratt *et al.* (1987).

Relative abundance and population size were assessed by a combination of transect counts and incidental observations throughout the study period. Waterbirds were censused during circumferential walks along beaches, covering the upper beach to the outer reef. Land birds were censused using 50 m wide, fixed-width transects through the forest. The distances covered (see Table 1) were roughly proportional to island size and were estimated using a 1:25 000 scale photomosaic map (Pohnpei State Land Commission 1985). All census routes were covered only once. Place names are from Bryan (1971), with orthographic changes made by local residents. Island areas were determined by superimposing a grid (1,600 grid units/km^2) over a 1:25,000 scale map and counting units over each island, and estimating fractions thereof.

Species Accounts

WHITE-TAILED TROPICBIRD *Phaeton lepturus*

The White-tailed Tropicbird is probably a scarce and irregular breeder on Sapwuahfik. I saw only four: three flying high above Peina on 4 June, and one flying below canopy level on Bigen Kelang on 21 June. Most of the islanders queried were unsure whether it nested on the atoll, but one recalled finding a nest with two young in the crown of a coconut tree on Bigen Keland in March 1977.

GREAT FRIGATEBIRD *Fregata minor*

The Great Frigatebird is present in small numbers throughout the atoll; local islanders indicate it roosts but does not nest there. I observed small groups of up to nine soaring high above the islands almost daily, usually at dawn and dusk.

PACIFIC REEF-HERON *Egretta sacra*

The Pacific Reef-Heron is uncommon to fairly common and usually solitary (maximum four seen together) on beaches and reef flats throughout the atoll. I saw no evidence of nesting during my visit, but

TABLE 1
Status and abundance of birds on Sapwuahfik Atoll based on general observations combined with counts along 50 m wide transects; nc=observed on transects but not counted.

Species	Status[a]	Density		
		Birds/km[b]	Birds/ha[c]	Birds/h
White-tailed Tropicbird	B/S			
Great Frigatebird	NBV/UC			
Pacific Reef-Heron	B/UC-FC	1.4		3.0
Red Junglefowl (Chicken)	I			
Pacific Golden Plover	NBV/C-VC	2.9		6.4
Mongolian Plover	NBV/S			
Tattler spp.	NBV/C	2.4		5.3
Whimbrel	NBV/S	0.3		0.6
Bristle-thighed Curlew	NBV/S			
Ruddy Turnstone	NBV/C	2.8		6.2
Sanderling	NBV/S			
Great Crested Tern	B/FC	1.2		2.6
Black-naped Tern	B/FC	0.6		1.3
Brown Noddy	B/VC	nc	nc	nc
Black Noddy	B/VC	nc	nc	nc
White Tern	B/FC-C		0.5	3.7
Micronesian Pigeon	B/UC[d]	0.1	1.0	
Long-tailed Cuckoo	NBV/S			
Micronesian Honeyeater	B/VC		1.8	13.1
Micronesian Starling	B/VC		2.7	20.0
Caroline Islands Reed-Warbler	(B)/C	0.7	5.1	
Grey Wagtail	NBV			

[a] B=resident year-round, breeding confirmed, (B)=resident year-round, breeding not confirmed but very probable, I=introduced and feral, NBV=nonbreeding visitor, VC=very common, C=common, FC=fairly common, UC=uncommon, S=scarce.
[b] based on single circumferential surveys of all islands, and covering the area from the upper beach to the reef edge (total survey time=320 min, total distance=11.7 km).
[c] based on forest surveys only: Ngatik 85 min/3.9 km, Peina 60/1.4, Bigen Karakar 15/0.2, Jirup 27/0.4, Bigen Kelang 22/0.3, Pikepe 10/0.1, Dekehnman 4/0.07, Wat 105/2.1, Pikenmetkow 10/0.1, Uataluk 25/0.4 (total=363 min/8.97 km).
[d] apparently confined to Wat where encountered at the rate of 3.7/hr, and with a population density estimated at 0.6/ha.

several islanders stated young birds are sometimes kept as pets. Of the 31 for which I recorded colouration, 12 (39%) were dark (greyish blue) morphs, 11 (35%) were piebald, and eight (26%) were white. I roughly estimated a total population of 30–40.

RED JUNGLEFOWL (DOMESTIC CHICKEN) *Gallus gallus*

Chickens (and pigs) are introduced, common, and semi-feral on Sapwuahfik. They are fed table scraps (especially rice and taro) and ground coconut, but they also range freely, taking natural foods. They stay mainly in the vicinity of human habitation and are much less frequently encountered in the more remote regions. I recorded *G. gallus* on Ngatik, Peina, Bigen Karakar, Jirup, Bigen Kelang, and Wat.

PACIFIC GOLDEN PLOVER *Pluvialis fulva*

The Pacific Golden Plover is a common to very common nonbreeding visitor, usually seen on beaches and reef flats. It was the most numerous shorebird species on Sapwuahfik in June 1998.

LESSER SAND PLOVER *Charadrius mongolus*

One Lesser Sand Plover that I saw at low tide on a reef flat at Dekehnman on 17 June is the only record. It was in a small group of shorebirds that included four *Arenaria interpres* and two *Pluvialis fulva*. A dark gray patch on the side of the face helped to identify it as a sand plover, and its relatively short, stubby bill, distinguished it from *C. leschenaultii*.

WANDERING TATTLER *Heteroscelus incanus* and **SIBERIAN TATTLER** *H. brevipes*

Two species of tattler occur regularly in Micronesia as migrants (Pratt *et al*. 1987). As they are morphologically very similar to each other, I include all tattler records as a species pair. I heard the bisyllabic call diagnostic of *H. brevipes* on only two or three occasions, whereas the rapidly uttered successive series of notes characteristic of *H. incanus* were heard more often. Tattlers were common on beaches and reef flats throughout the atoll, and usually solitary.

WHIMBREL *Numenius phaeopus*

I saw no more than five or six Whimbrels during five weeks on Sapwuahfik. In flight, they all showed a prominent white patch on the rump and base of tail, a characteristic of Eurasian subspecies.

BRISTLE-THIGHED CURLEW *Numenius tahitiensis*

The one Bristle-thighed Curlew I saw on a beach at Pikepe on 12 June 1998 is the only record. Its disyllabic call and elongate, hairlike thigh feathers observed clearly through binoculars from about 10 m readily distinguished it from *N. phaeopus*.

RUDDY TURNSTONE *Arenarius interpres*

Turnstones were fairly common on Sapwuahfik throughout the study period, being most numerous on rocky beaches, and usually in small flocks of 5–10.

SANDERLING *Calidris alba*

A Sanderling that I saw on a tidal flat on Bigen Kelang on 15 June, and again (presumably the same bird) on three other occasions at the same site over the next four days is the only record.

GREAT CRESTED TERN *Sterna bergii*

This species is uncommon to locally fairly common and breeds in small numbers on coralline sand and gravel bars. I observed singles and small groups of 2–3 in flight throughout the atoll, and larger assemblages of about 10–15 at Ngatik, Jirup, and Uataluk. Hitler

Sehpin, who resides on Jirup for a large part of the year informed me that *S. bergii* nests on the exposed bars off the northern end of the island, usually timed to the lowest tides of summer. I saw several adults but no evidence of nesting during my initial visit to the site on 6 June, but recorded five nests (all 1 egg) and 10 adults on 14 June, and 15 nests (all 1 egg) and 16 adults on 18 June; all nests were on the ground in an area roughly 2 × 1.5 m. Neither eggs nor young were present on 26 June, when the bar appeared to have been resculpted by waves during high tides.

BLACK-NAPED TERN *Sterna sumatrana*

The Black-naped Tern is fairly common throughout the atoll and usually seen in small groups of 2–10. I found one nesting colony of about 50 birds on a shell and coral rubble bar between Wat and Pikepe. No eggs were present on 11 June, but I found three clutches (on the ground) on 16 June, nine on 17 June, and 15 (6 with 1 egg, 9 with 2 eggs) on 20 June, all within a 20 × 2.5 m strip along the top of the ridge. On 26 June, I found only three clutches, the others probably having been harvested by islanders or destroyed during high tides.

BROWN NODDY *Anous stolidus*

The Brown Noddy is a common to very common resident throughout the atoll, but the population is difficult to assess as the birds often are hidden from view high in the crowns of coconut trees, where they nest and roost. The largest concentrations I observed were flocks of about 30–150 soaring over the larger islands on several occasions at dusk. I roughly estimate a total population of about 500–1,000. Young were frequently heard calling from the tops of the trees on Peina, Bigen Kelang, and Wat throughout June.

BLACK NODDY *Anous minutus*

The Black Noddy is a common to very common resident throughout the atoll. Resident islanders indicate it usually nests in *Artocarpus* (breadfruit) and *Pandanus* trees. I saw no nests but observed many birds flying with strands of algae and other plant materials in their bills, presumably for nest building. Singles and small groups of 5–10 were nearly always in view over the reef flats, and larger groups of 20–30 were often seen feeding on small fish driven to the surface of the lagoon by larger predators. The largest group I saw was about 50 roosting in two adjacent *Guettarda* trees at the forest edge on the windward side of Uataluk on 9 June. I roughly estimated a total population of about 500–1,000.

WHITE TERN *Gygis alba*

The White Tern is fairly common in *Cocos* throughout the atoll, usually in small groups of 2–6, and often in *Pandanus* trees; many I saw appeared to be paired, flying in tandem.

MICRONESIAN PIGEON *Ducula oceanica*

The Micronesian Pigeon is an uncommon resident apparently confined to Wat, and with a total population (extrapolated from strip census counts—Table 1) of about 50. Hunting pressure is heavy and if unabated may eventually contribute to extirpation. Two were shot by one of the islanders that brought me to the eastern islands from Ngatik. The species is prized as game and there are no hunting regulations.

LONG-TAILED CUCKOO *Eudynamys taitensis*

The Long-tailed Cuckoo is apparently an uncommon but regular nonbreeding visitor to Sapwuahfik and it has been observed by many islanders (pers. comm.), mainly during the northern summer. It migrates to central and southern Pacific islands from breeding grounds in New Zealand (Pratt *et al.* 1987). I saw none, but I include *E. taitensis* as part of the avifauna based on the many sightings by local residents who described it to me in detail, referring to it by its Pohnpeian name, Likoprei.

MICRONESIAN HONEYEATER *Myzomela rubratra*

The Micronesian Honeyeater is common to very common throughout the atoll, being most numerous at the forest edge. Many of those I saw during late May-early July appeared to be paired. A nest I observed about 5 m high in the crown of a young coconut tree on Peina on 4 June was occupied by an adult that was flushed (presumably the same bird) on several occasions throughout the day. Although small in size, honeyeaters are also considered "game", and they are less numerous on Ngatik than on the more remote and sparsely populated islands.

MICRONESIAN STARLING *Aplonis opaca*

The Micronesian Starling was the most common landbird on the atoll during summer 1998 (Table 1), but it was relatively scarce on the main island (0.56/ha), doubtless due to excessive hunting pressure. It occurs in all habitats, and from the ground to the topmost part of the canopy. I saw no nests, but observed many juveniles with distinctly striped underparts, some soliciting food from adults.

CAROLINE ISLANDS REED WARBLER *Acrocephalus syrinx*

The Caroline Islands Reed Warbler (Fig. B) is common in *Cocos* forest throughout the atoll, being most numerous in dense thickets or patches of understorey. I recorded reed-warblers on all islands with the exception of Dekehnman, where it almost certainly occurs at times in view of that island's proximity to Wat. Many I saw appeared to be paired, and one on Uataluk was observed carrying grasses (presumably nesting material) on 10 June.

GREY WAGTAIL *Motacilla cinerea*

A Grey Wagtail (sex undetermined), seen on 3 and 4 June and collected on 7 June and deposited as a study skin in the Museum of Comparative Zoology, Harvard University (MCZ 333096), is the first record for the Federated States of Micronesia. Measurements (mm) of the dried skin are wing (flattened against rule) 81, tail 90, and exposed culmen 12; body mass at time of capture was 19 g. The bird was flushed

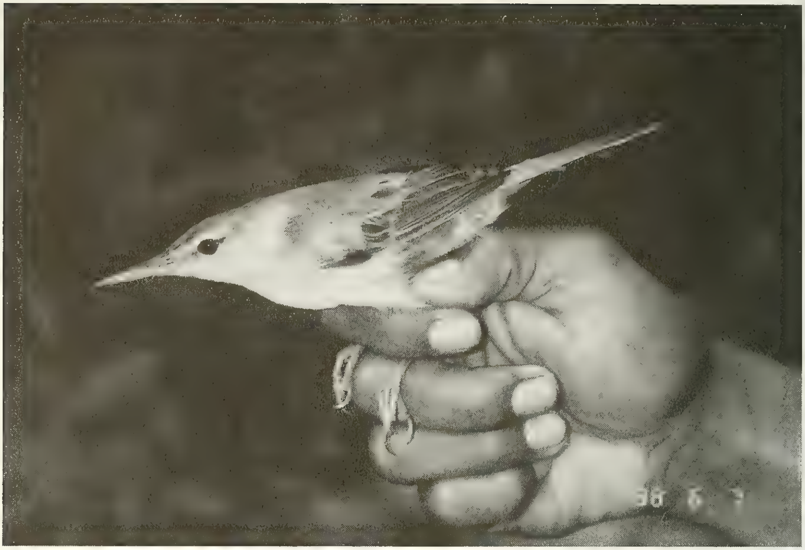

Figure B. Caroline Islands Reed Warbler *Acrocephalus syrinx* captured and released on Peina Island.

from the ground on many occasions, mainly along a trail leading into the forest, and was usually observed walking or hopping in tight circles, apparently feeding on insects flying close to the ground. *M. cinerea* breeds in Eurasia and overwinters south to southern Africa, southern Asia, Indonesia, the Philippines, New Guinea and Australia (Pizzey 1980, Pratt *et al.* 1987). It is a rare migrant to western Micronesia (Pratt *et al.* 1987), where 2–3 were observed at Koror, Palau during 12–16 October 1978 (Engbring & Owen 1981), another on Guam on 15 March 1981, and possibly two others (identified as being either *M. cinerea* or *M. flava*) on 26 February 1981 (Maben & Wiles 1981). None of the Sapwuahfik islanders who viewed the prepared specimen was familiar with the species, indicating it is of unusual occurrence there. The Sapwuahfik record extends the range of the species about 1,600 km southeastward into Oceania.

Discussion

Of the 23 species of birds recorded on Sapwuahfik Atoll, one (the Red Junglefowl=chicken) is introduced, and 11 are nonbreeding visitors, eight being migrant charadriiforms. The indigenous, resident, breeding avifauna includes four landbirds (all widely distributed in Micronesia) and seven waterbirds (a tropicbird, a heron, and five terns). The most common waterbirds are Brown Noddy and Black Noddy, and the most common land birds are the Micronesian Starling and Micronesian Honeyeater. In view of small island size and little habitat diversity, few if any additions to the list of resident breeders are likely, but observations at different times of the year will doubtless add many species to the list of migrants. Several islanders reported seeing kingfishers from time to time, referring to them as kutoahr, the Pohnpeian name for the Micronesian Kingfisher (*Halcyon cinnamomina*). Whether they are Micronesian Kingfishers or (more likely) Sacred Kingfishers (*H. sancta*), which apparently migrate or wander widely in Micronesia (Buden 1998), or some other species is uncertain.

The paucity of birds on the main island, Ngatik, is probably due in large measure to excessive hunting pressure from the human residents. Birds are hunted on the other islands as well (though less frequently), and this activity alone or in combination with environmental stress (e.g., droughts, storms, introduced predators) may eventually contribute to the extirpation of the small and localized population of Micronesian Pigeon, as it apparently did on Kapingamarangi Atoll (Buden 1988), about 500 km to the south. Virtually all bird species on Sapwuahfik are considered game. One group of hunters I encountered had recently "bagged" pigeons, starlings, honeyeaters, noddies, and White Terns. The eggs and young of seabirds also are harvested from time to time.

Potential predators of birds on Sapwuahfik include four species of introduced mammals: I recorded cats *Felis catus* (on Ngatik, Bigen Karakar, and Peina), dogs *Canis familiaris* (on Ngatik, Bigen Kelang, and Wat), rats *Rattus* spp. (on Ngatik, Peina, Dekehnman, and Wat), and pigs *Sus scrofa* (on Ngatik, Peina, Jirup, Bigen Kelang, and Wat). Rats are especially abundant on Wat, occurring on the ground, in houses, and in trees, and in daylight as well as at night. Using eight Japanese snaptraps, residents at the southern end of Wat caught 13 rats in and around their house during the night of 19 June, and several others had escaped. All 13 were black rats (*Rattus rattus*): eight males averaged 195.0 g (160–240 g) in body mass and five females averaged 192.0 g (150–235 g). The characteristically smaller Polynesian rat (*R. exulans*) occurs together with the black rat at least on Ngatik where I collected two males (75 and 61 g) and two females (63 and 64 g)—males had enlarged scrota and the females diagnostically bore four pairs of nipples. Several Ngatik residents indicated that they had observed both large-sized rats and small-sized rats with young. I did not assess rat populations on islands other than Ngatik and Wat.

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I thank Kanio Frank (former Representative for Sapwuahfik on Pohnpei) and Welenson Saimon (chief of Sapwuahfik) for making preliminary arrangements for my visit to the atoll, Taylor Sehpin (teacher at Sapwuahfik Elementary School) for logistical support during my stay, and I am grateful to many other residents, especially Harrison Panuel, Snyder Panuel, Hitler Sehpin, Misko Sehpin, and Regina Sue for all of their many kindnesses and courtesies.

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A range extension for the Caatinga Black-tyrant, *Knipolegus franciscanus* (Tyrannidae), a rare Brazilian endemic

by Flávio C. T. de Lima

Received 16 January 1999

The Caatinga Black-tyrant *Knipolegus franciscanus* is probably the least known member of the genus *Knipolegus*. Silva & Oren (1992) were the first to recognize it as a valid species. The species is known from the following localities: in the state of Minas Gerais, Pirapora (17°20′S, 44°56′W) (Pinto, 1944), Januária (15°29′S, 44°21′W) (Snethlage, 1928, as "Brejo Januaria"; Willis & Oniki, 1991, Mattos *et al.* 1991), Itacarambi (15°06′S, 44°05′W) (Mattos *et al.* 1991, Silva & Oren, 1992), Montalvânia (14°25′S, 44°21′W) (Mattos *et al.* 1991) and Manga (14°45′S, 43°55′W) (Mattos *et al.* 1991); in the state of Goiás, Iaciara (14°05′S, 46°37′W) (Silva & Oren, 1992) and "Serra Geral" (Silva & Oren, 1992, an imprecise locality); in the state of Bahia, the only published record was from Bom Jesus da Lapa (13°15′S, 43°25′W), the type locality (Snethlage, 1928, as "Lapa do Bom Jesus"). An additional record from Minas Gerais is at Curral de Pedras, on the rio Jequitaí banks, municipality of Jequitaí (17°15′S, 44°28′W), where M. Raposo (pers. comm.) collected five specimens (deposited in the Museu Nacional de Rio de Janeiro) in November 1995.

On 6 January 1997 a female was seen in a "lajeiro" (a rocky outcrop) in the caatinga vegetation, close to the village of São Tomé, municipality of Campo Formoso, Bahia (10°36′S, 40°56′W), elevation c. 540 m. Typical colour markings observed were the black tail, the dark grey striped underparts and flanks, and the red iris. The bird was perched in a dry shrub; foraging manoeuveurs observed were aerial hawking and the sally-glean. The typical raising and lowering of the tail, mentioned by Willis & Oniki (1991) and Silva & Oren (1992), was also observed. This record extends the known range of this species c. 440 km northeast from the nearest known locality, Bom Jesus da Lapa.

Silva & Oren (1992) considered *K. franciscanus* as an inhabitant of the deciduous dry forests. This contrasts with the present record: at São Tomé, the species was observed in a rocky outcrop (similar to the observation of Willis & Oniki [1991] at Januária), in a dense, well preserved, shrubby caatinga (''caatinga densa arbustiva'', *sensu* Hueck, 1972). São Tomé is situated in the core of the caatinga region; no deciduous dry forests occur at this locality, or close to it (Gonçalves & Orlandi, 1983). It must be pointed out, however, that the key habitat for the species appears to be rocky outcrops. In addition to the new record herein present and that of Willis & Oniki (1991), Guy Kirwan (in litt.) and Marcos Raposo (pers. comm.) found this bird in this type of environment, respectively in the region between Itacarambi and Manga and at Jequitaí. Moreover, all known records of the species come from regions with limestone rocky outcrops. The caatinga region of northeastern Brazil, one of the poorest known ornithologically in South America, clearly warrants further ornithological exploration.

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BOOKS RECEIVED

Debus, S. 1998. *The birds of prey of Australia: A field guide to Australian raptors.* Pp. 160, 46 colour plates, 50 monochrome illustrations. £11.95 (pbk). Oxford University Press. ISBN 0-19-550624-3.

This useful little guide, based on the raptor section from volume 2 of the *Handbook of Australian, New Zealand and Antarctic birds (HANZAB)*, covers all 24 resident species of the Australian diurnal birds of prey. Stephen Debus has pulled together a great deal of biological and geographical information about this group of birds, and his text is well illustrated by colour plates (copies of those in HANZAB), colour photographs and line drawings of birds in both perched and flying modes.

Debus has grouped the Australian raptors into nine groups: the Osprey; White-tailed Kites of the genus *Elanus*; endemic hawks such as the Square-tailed Kite and Red Goshawk; the Crested Hawk (*Aviceda*); large kites and sea-eagles; harriers; goshawks and sparrowhawks of the genus *Accipiter*, buzzards and allies; true falcons. Each of these groups gets their own chapter, with separate accounts for the different species. Debus gives useful tips on identification, such as the shape of the wings, the way they are carried, underwing patterns, and the speed of flapping. Useful line-drawings re-inforce the message, as exemplified by most species getting two simple but effective outlines showing the difference when the bird is soaring or fast gliding. As he says, the raptors are usually a ''nondescript brown bird disappearing into the distance'' rather than a brightly coloured songster sitting on a branch in front of you. This means that flight behaviour and mannerisms (jizz) becomes all the more important.

There is a glossary and a bibliography but no index, and annoyingly the plates have no numbers and there is no cross-reference system between the plates and the text for a particular species. Otherwise this is a very nicely-presented and useful little book, which ends with a cautionary but generally positive last chapter on *Threats, Conservation and the Future.*

Clemency Thorne Fisher

Feduccia, A. 1998. *The origin and evolution of birds.* Pp. x+466, numerous black and white photographs, drawings and diagrams. Yale University Press. £17.95 (pbk). ISBN 0-300-07861-7.

For a review of the first edition (1996) of this book, see Bull. Br. Orn. Cl. 117: 152 (1997). The new edition is a facsimile reprint of the first with an additional 32-page chapter devoted mainly to the still contentious questions of the origin of birds and of bird flight. Important recent dinosaur and bird fossils are discussed in detail, especially those found in China, and are well illustrated. Subjects include the controversial *Sinosauropteryx*, whose dorsal and caudal fringe of ''downy'' fibres has been claimed to consist of proto-feathers but was probably subcutaneous, supporting a sort of dorsal and caudal fin as part of an adaptation for a semi-aquatic life. The author vigorously maintains his view that there is no unambiguous evidence for the widely accepted idea that birds evolved from theropod dinosaurs, but that they arose from a much earlier stage of the reptile radiation. A deeply interesting book, and the paperback edition excellent value at £17.95.

David Snow

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CORRECTIONS TO TEXT

Page	3			Errata to Bulletin 118, pages 133-134
"	18	line	45	*Rostrhamus not Rosthramus*
"	27	"	16	*Puffinus assimillis boydi* not *Puffinus boydi*
"	33	"	14	*Macheiramphus not Machaeramphus*
"	33	"	15	*riocourii not ridcovrii*
"	33	"	15	*Rostrhamus not Rosthramus*
"	33	"	26	*Hieraaetus not Hieraeetus*
	33	"	29	*haliaetus* not *haliaeetus*
"	35	"	44	*Gypaetus* not *Gypaeetus*
"	36	"	9	*Hieraaetus* not *Hieraeetus*
"	36	"	14	*Harpyhaliaetus* not *Harphyaliaetus*
"	38	"	12&36	*Morphnus* not *Morphus*
"	44	"	1	*Seiurus* not *Seirus*
"	126	"	40	*delatrii* not *delattrii*
"	137	"	31	*Collocalia not Collacalia*
"	137	"	38	*chloronothos* not *chloronothus*
"	141	"	8	*Camarhynchus* not *Camarhychus*
"	141	"	17	*Carpodacus* not *Caropdacus*
"	142	"	1	*japonensis not japonicus*
"	172	"	12	*fuscorufus not fiscorufus*
"	173	"	40	*coeruleicinctis not coeruleicinctus*
"	194	"	10	*Oenanthe* not *Oneanthe*
"	199	"	8	*viridigaster* not *virdidigaster*
"	221	"	22	*Syndactyla not Syndacytle*
"	223	"	26	*maculicaudus* not *maculicaudatus*
"	232	"	40	*Arremonops* not *Arremenops*
"	238	"		Plate 4 not 3
"	239	"		Plate 5 not 4
"	253	"	40	*Conopias* not *Canopias*
"	256	"	31	*Lampropsar* not *Lamprospsar*

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